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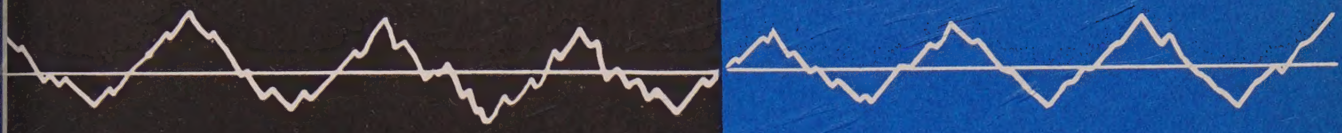

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NOVEMBER 1961

cycles

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VOLUME XII, NUMBER 1

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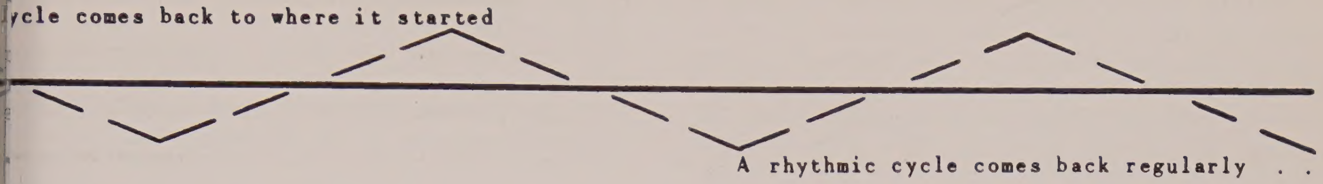

ycle comes back to where it started
A rhythmic cycle comes back regularly . .

THE DIRECTOR'S LETTER

ear Member:

The study of cycles is a special case of everal very much larger subjects.

Before expanding our subject however, let s narrow it. In its narrowest sense cycle tudy deals with *periodicity,* or successive aves of absolute regularity. Waves of this ort are not often found in nature.

In our work we broaden the concept to inlude a succession of waves or events that ecur with *reasonable* regularity—that is, ith rhythm or a beat. However, we mostly hink of such cycles as having an average wave ength that remains unchanging. If the waves verage 11.24 years long in the early years we xpect them to average 11.24 years long in the ater years.

From time to time I have discussed irreglar cycles—cycles that become longer or horter as they unfold, or which show other rregularities. There is no need to expand hat discussion here.

To take a still broader view, cycle study s a special case of *pattern.* It is one paricular kind of pattern. You can see that the tudy of cycles can easily lead into a study f patterns and that such a step would expand he scope of the problem enormously.

There is an analogy here to geometry. The eometry you studied in high school dealt with traight lines. It is a special case of a generalized geometry that can be worked out for curved lines, because a straight line is merely a special sort of curved line—a curved line with zero curvature. A straight line can also be thought of as a segment of the circumference of a circle of infinite radius. (The bigger the radius the flatter the circumference. Make the radius infinitely big and we have the circumference infinitely flat!) I remember working out such a system of generalized geometry when I was in high school.

What is the use of cycle knowledge except for forecasting? After all, the aim of all scientific inquiry is the ability to forecast accurately. Cycle study can therefore be thought of as one particular kind of *forecasting.* The whole field of forecasting is therefore closely related.

Cycles occur in economic affairs. Cycle study is therefore a subdivision of economics, and economic cycles cannot properly be understood without economic knowledge to supplement it. Furthermore, because of our concentration on material things, economic statistics are the most thoroughly developed and easiest obtained. Also, because of our worship of the dollar, more people are interested in the possibility of cycles in economic data. We put emphasis on cycles in economics in our publication because of interest and convenience, but this is only one small part of the whole field of cycles.

Cycles are one characteristic of war, and need to be studied in proper relation to other characteristics of war. And so on for all the different things of which cycles are a characteristic.

Cycle study is a subdivision of social physics—the science that attempts to study man's human behavior as if the individual were an atom or a molecule and to derive laws of behavior, such as the one that suggests that the origin of college students are inversely as the square of their distance from the college.

Cycles are one aspect of behaviorism. Behaviorism is a term used by psychologists for study that does not try to figure out *why* animals (and men) behave as they do. Behaviorism merely observes *how* the animal behaves. Going up and down in cycles is one of these ways.

Cycles can hardly be said to be an aspect of government, but governmental action can nullify cycles, and therefore government, especially in its octopus-like encroachment upon our private lives, is a collateral field of inquiry.

Cycles are the fluctuation of things around an underlying trend. Growth trends therefore, although not directly related to cycle study, are a prerequisite for any use of cycle knowledge. The problems are further deepened, and widened, when we get into the subject of the cause of cycles.

You simply cannot make an intelligent stu
of something which is part of something large
without making at least some study of t
larger thing. This is my excuse for roami
afield into such matters as trend, patter
forecasting, economics, history, governmen
In fact, one of the great drawbacks to cyc
study is the breadth and width of the proble
and the variety of subjects it covers. This
also one of its great fascinations.

Occasionally I go beyond even these limi
and discuss such trivial matters as my boyho
home. I do this deliberately for variety a
because I have picked up the feeling that mo
of our readers like these side excursions.
helps (I hope) to make a human being out of
and thus perhaps to make cycle study mo
personal and hence more interesting. This
turn helps the renewal rate and, of cours
increases the money available for cycle stud
If you don't like the Director's Letters, ju
skip them, as you doubtless try to do for t
ads in the magazines you read. My feelin
won't be hurt—as long as you renew!

Cordially yours,

Edward R. Dewey

Directo

NOTICE: Change in Meeting Place for

The New York Academy of Science November Conference

Last month we announced a conference on *Rhythmic Functions in the Living System* to be held November 8, 9, 10 and 11 under the joint auspices of the New York Academy of Sciences and the Foundation for the Study of Cycles.

The location of the conference has been changed to the Henry Hudson Hotel.

AN IMPORTANT NEW CYCLE DISCOVERY

by Edward R. Dewey

I want to tell you about the most curious le behavior I have ever come across. I coner its discovery quite a break-through. s new knowledge will be a real help in ecasting.

I find that the International Battle Index m A.D. 1060 to date has been characterized long cycles and short cycles *alternately*. you ever hear of anything like that?

Moreover, the long cycles continue for *ctly* the same span of years as do the short les; 86.4 years of long cycles; 86.4 years short cycles; and repeat. Seven long cycles lowed by nine short cycles; followed by en long cycles; followed by nine short les; again and again.

Whether this behavior continues back of 0 I do not know. I haven't had time to find .

During the 86.4-year era of long cycles, ere is no hint of the short cycles, and ce-versa. The one sort of cycle stops dead its tracks. The other starts in out of the e. Then the second sort stops dead and the st sort starts in again—all at 86.4-year tervals—time after time!

The whole sequence of 16 waves (7+9=16) kes of course just twice 86.4 years, or 2.8 years. In the period under study there ve been five of these sequences.

This behavior is so clear cut as to be ablutely unmistakable. And five times in sucssion could not possibly be the result of ance.

The astronomers among our membership will ow that cycles generated by planets have rying lengths as the planet goes around the n at varying speeds. They will also know at Neptune takes 165 years for its journey, d of course 165 years is close to 172 years. t there can be no *possible connection*. The 2.8 year interval is so precise and so regar that we can be sure of its length within e or two tenths of a year. Moreover the cle lengths do not change gradually as they uld if associated with a planet's movement, t suddenly, as I said above. And finally, e eccentricity of Neptune's orbit is so ight that the wide variation between the length of the long cycles and the length of the short cycles could not possibly result even if the other factors were favorable to the hypothesis. Some other explanation must be sought.

The Alternating Cycle Lengths

The length of the short cycles is 9.6 years; the length of the long cycles is 12.34 years. Seven times 12.34 equals 86.4; nine times 9.6 equals 86.4. The length of 9.6 years is a well established cycle length. Cycles between 12 and 13 years have also been found, but their lengths have never been pin pointed, except perhaps for copper prices.

Sixteen waves in 172.8 years is *an average* of 10.8 years per wave. True enough, but how far from 9.6 years for 9 times, 12.34 years for 7 times: Its like wanting sixteen 25-year old girls for a dance number and my sending you nine 10-year olds and seven 40-year olds and saying, "Won't that do just as well?"

Incidentally, a regular 10.8-year cycle that does *not* change its length does exist. It is one of the first cycles I ever found. It is present *along with* the 9.6-year cycle in the abundance of snowshoe rabbits in Canada!

The 9.6-Year Cycle

I suppose the 9.6-year cycle is the best authenticated cycle we have. It characterizes the abundance of Canadian lynx from 1735 to date, and the abundance of most Canadian mammals for as bar back as there are figures. It characterizes the abundance of Atlantic salmon both in the St. Lawrence River and at Wye in England. Rainfall in India has this cycle. So does the abundance of chinch bugs in Illinois. The acreage planted to wheat in the U.S.A. has 9.6-year cycles; the acreage harvested shows this cycle even better (but it is *not* present in the *price* of wheat). It is present in the ozone content of the atmosphere at Kew in England; in the abundance of tent caterpillars in New Jersey. Professor Huntington found it in human heart disease in New England. Other examples could be given.

With so many things having a cycle of this exact length it would not be surprising to find it in the International Battle Index, although I myself have never before found it in human activity (except wheat acreage, where it seems to me to be man's response to weather, or what he thinks the weather is going to be rather than to economic forces. The amazing thing is not that the International Battle Index has this cycle, but that in battles the cycle *comes* and *goes*, whereas in all these other things it keeps on steadily!

The 12.34-Year Cycle

The 12.34-year cycle is not an established cycle length, although a number of things have cycles that measure from 12 to 13 years long. There are definitely one or more cycles of this general order of magnitude, but the exact length or lengths have not yet been pinned down in the way that the 9.6-year cycle length has.

What I want *you* to tell *me* is *why*, starting in 1735 for example, with the beginning of the lynx figures, the lynx has a 9.6-year cycle and wars have a 12.34-year cycle. Then, in 1771, the war index suddenly changes to a 9.6-year cycle and goes along in step with the lynx cycle for 86.4 years. Then, while lynx abundance keeps on going up and down with a 9.6-year cycle, the war index suddenly switches back to the 12.34-year wave length for 86.4 years to 1943. Then, in that year, the two snap back together again on a 9.6 year basis.

Rather obviously there must be a 9.6-year force in our environment that affects both animals and man. Also, rather obviously, this force keeps on going continuously, or else the things that have the 9.6-year cycle continuously would get off the track. But if it keeps on operating all the while, how does it happen that every other 86.4 years (for at least the last 900 years) man is insulated from this force and a 12.34-year force takes its place? And what happens to the 12.34-year force while the 9.6-year force is operating?

Crazy or not, that's the way it is. It's not only in Wonderland that things get "curiouser and curiouser," as Alice put it.

Precise Forecasting Possible

And now what are the implications? Certainly, as far as forecasting international battles are concerned, it's going to be a godsend. Instead of talking of some academic abstraction that averages 9.6- and 12.34-year cycle together to get 10.80 years, which is alway either too long or too short to fit the actua facts, we can now forecast with *assurance* tha 9.6-year cycles will govern certain particula fluctuations of international battles. Thi 9.6-year cycle started in 1943 and will end i 2029, 86.4 years later, at which time th 12.34 year cycle can be counted on to tak over—of course assuming that the remarkabl history of 900 years continues. We know tha 1952 was a big battle year. We can look wit alarm at the period centering on 1962.

This so called 10.8-year (first 9.6, the 12.34) cycle in wars is not of course the onl cycle present in this behavior, as you wil know from previous reports, but insofar as i goes I am convinced that it is quite dependable.

Do other cycles in war or other things be have this way? They do, but never before hav these variations been pinned down so clearl and unmistakably.

The first time I ran across behavior o this sort was in 1939 when I was studying woo price cycles for the American Woolen Company Here one particular cycle persisted in runnin first long, then short, then long again. I have come across it often since, but neve clearly enough to be sure that the irregularity was not due to randoms or the *blending* o two or more cycles into a pattern.

Our eyes have been opened to a whole ne series of possibilities.

Now that we know that one cycle really doe *stop* and another one really *starts*, and tha these wave lengths *alternate*, we can go bac over a lot of old work and come up with muc more useful information. That is, instead o asking, "How long is the cycle, on the average?" our query from now on can be, "Does the cycle run along at one constant length, like the 9.6-year cycle in lynx does? Or does it alternate, first one length and then another length, like the cycle I've been tellin you about in war? If the latter, what are th two lengths? When are they going to switc from one to the other?"

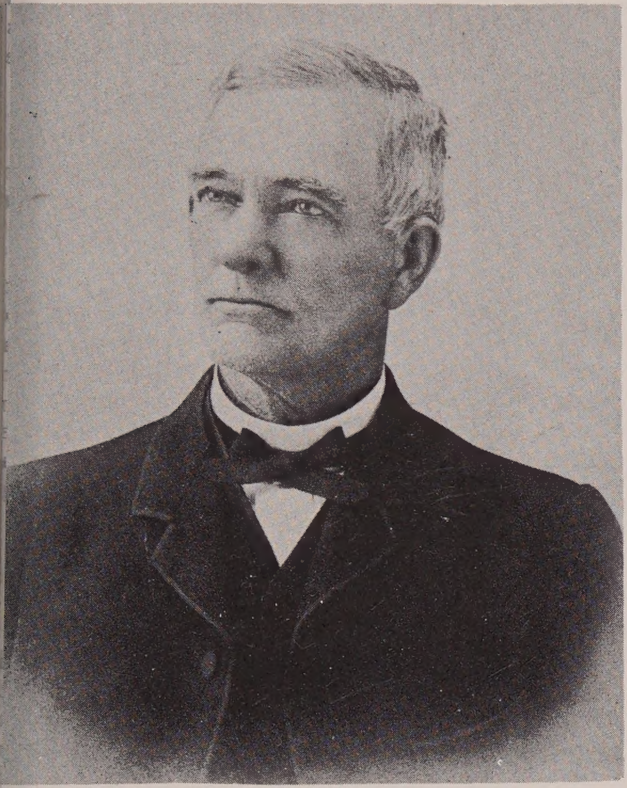
I feel we have taken a big step forward.

OW IT CAME OUT

BENNER'S PIG IRON PRICE FORECAST

G. Shirk

Did you ever see the chart below? It is sed on the work of Samuel Benner. The work s first published in 1876. The chart shows e average, or ideal pig iron price cycle ich Benner worked out from the 1834—1874 ta he had on hand. The chart also shows his extension of the pig iron price cycle through 1899.



SAMUEL TURNER BENNER
Photograph through courtesy of
Col. Ralph C. Benner of Washington, D.C.

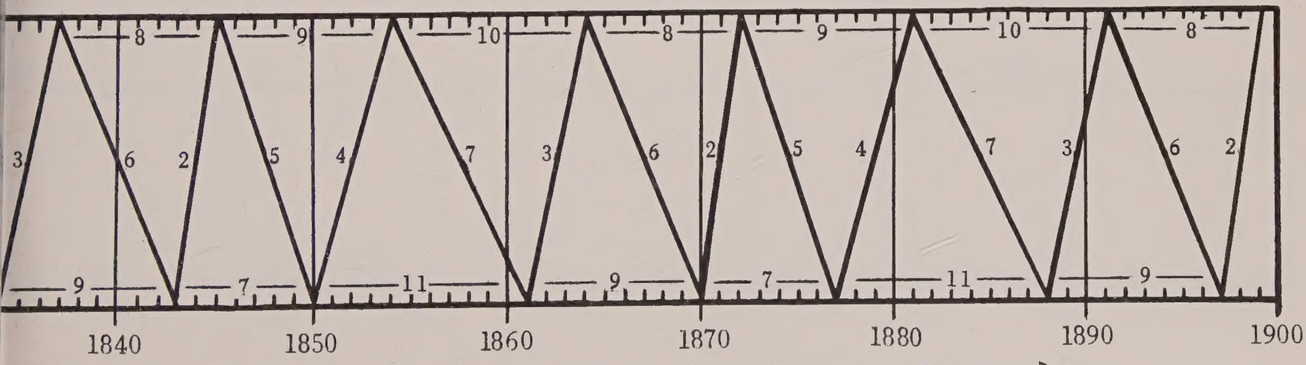
About once a month someone sends us a copy of one of Benner's charts. Readers ask if we have ever seen these charts, or know about them. We have promised often, and far and wide, that we would review Benner's work—it's about time that we fulfilled that pledge.

In 1871 Samuel Benner was a prosperous farmer in Bainbridge, Ohio. He had been in his father's iron works before his Civil War service, and thus was familiar with the problems of industry as well as the problems of farming.

Because of the panic of 1873, and the hog cholera, Benner lost everything. His severe losses turned his mind to the problem of how to remain prosperous despite panics. He knew that by accurately forecasting the probable future course of prices, and the times of panic, one could be forearmed against catastrophe.

The result of his work, including the forecasts, is contained in a book *Benner's Prophecies of the Future Ups and Downs in Prices,* which was published in 1875. (It is now very difficult to find a copy of this work.) Benner lived to see the forecasts contained in his little book come true, almost without exception. The forecasts contained in the book were based on the cycles which Benner found in the various series he studied.

Benner found cycles, and made forecasts based on the cycles in PIG IRON, HOGS, CORN,



ig. 1: The Cycle in Pig Iron Prices (by Samuel Benner)

The pig iron price cycle is outlined as he worked it out on Figure 1. We have extended it on Figure 2 back to 1784, and forward to 1960. The cycle follows a pattern of 9—7—11 years (and repeat) from low to low, starting with a low at 1834.

The highs follow a pattern of 8—9—10 years (and repeat), starting with a high in 1837. The up and down legs of the cycle also follow a set pattern as marked on Figure 1. Benner worked this cycle out from the data he had. These data covered the period 1834—1874. He then extended the cycle, as shown on Figure 1, to the year 1899.

How has this cycle worked out?

Table 1 in the next column gives the record. The average yearly price of pig iron is used as the measure against which the turning points on the cycle are checked. We used our record of pig iron prices (see page 288) for the entire period. If the price at a high year on the cycle was higher than the price at the previous low year on the cycle, we considered the forecast to have been right. The price at the ideal high year was not necessarily the highest price, it was just higher than the previous low to qualify as having been right. The absolute high might be a year before or after the ideal time, but so long as the price at the cycle high was up from the price at the previous cycle low, the cycle was (by our definition) fulfilled.

On the other side of the cycle, if the average yearly price for the ideal year of low on the cycle was below the price for the previous cycle high year, then the forecast was considered to have been right.

Table 1

THE RECORD OF BENNER'S PIG IRON PRICE CYCLE

	High and Low Years on Benner's 9 -7 -11 Cycle		Average Yearly Price—Dollars per Long Ton	Cycle Rating
Taking Benner's 9-7-11 progression back	1789	Low	$22.67	
	1791	High	25.63	Right
	1796	Low	31.25	Wrong
	1800	High	35.79	Right
	1807	Low	39.00	Wrong
	1810	High	41.25	Right
	1816	Low	50.21	Wrong
	1818	High	42.33	Wrong
	1823	Low	37.50	Right
	1827	High	42.83	Right
Period for which Benner had data on which he based cycles and forecast	1834	Low	29.83	Right
	1837	High	43.56	Right
	1843	Low	25.54	Right
	1845	High	32.59	Right
	1850	Low	23.19	Right
	1854	High	36.63	Right
	1861	Low	20.26	Right
	1864	High	59.22	Right
	1870	Low	33.23	Right
	1872	High	48.94	Right
Period covered by Benner's forecast	1877	Low	18.92	Right
	1881	High	25.17	Right
	1888	Low	18.88	Right
	1891	High	17.52	Wrong
	1897	Low	12.10	Right
	1899	High	19.36	Right
Bringing Benner's 9-7-11 progression forward	1904	Low	15.57	Right
	1908	High	17.57	Right
	1915	Low	14.01	Right
	1918	High	33.25	Right
	1924	Low	22.10	Right
	1926	High	21.64	Wrong
	1931	Low	17.35	Right
	1935	High	18.68	Right
	1942	Low	24.00	Wrong
	1945	High	25.02	Right
	1951	Low	52.38	Wrong
	1953	High	56.02	Right
	1958	Low	70.06	Wrong
	1962	High		
	1969	Low		

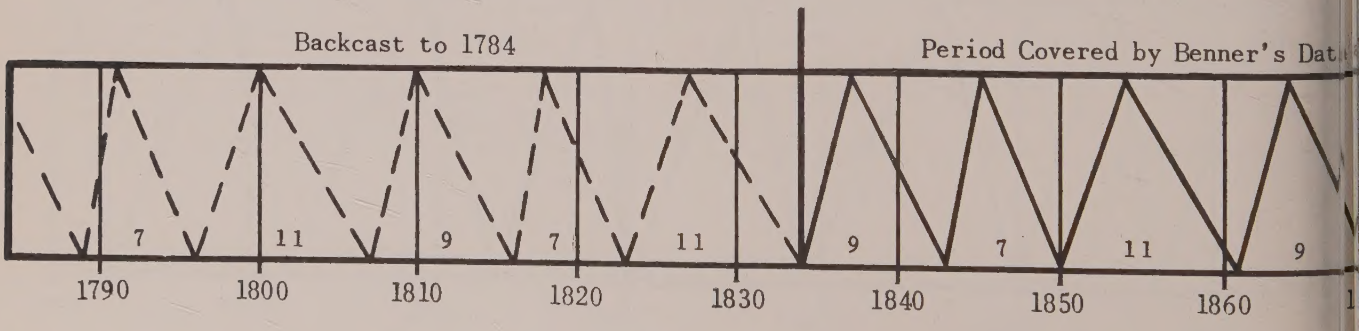


Fig. 2: The Benner Cycle in Pig Iron Prices Extended Back to 1784

On this basis, the cycle "worked" 75% of e time over the 1784—1960 record. Further- ore, from the time Benner's record started ntil the nineteen forties, it worked almost rfectly. This is a forecasting record surely be envied. In the face of this evidence it s difficult to see how anyone can contend hat there is no such thing as rhythm in eco- omic statistics.

Of course, a rhythm may be obscured or even verwhelmed by other forces, just as you can ave a chilly spell in the summer time. An- ther force can override or wash out a cycle, f the second force is moving in an opposite irection from the cycle, and at a faster rate han the cycle. Such forces might be a general nflation, or a constantly rising unit labor ost. We have seen over the past twenty years most unusual development in the price record f pig iron. It just goes up and up and up. We ave recently been through the most prolonged ise in the whole 177 year period. (See the hart of the record of pig iron prices on the ext two pages). According to Benner, lows ere due in 1942, 1951, and 1958. In all cases, he actual price kept rising. The behavior of ig iron prices since World War II is certain- y not typical of the behavior prior to World ar II. In fact, when you look at the chart f this record you would think they were not he same set of figures before and after World ar II.

The next low on Benner's cycle is the year 969. (This also is the low year on the ideal .2-year cycle the Foundation has isolated in ig iron prices. We used all the figures from 784 forward. Benner's record was a very short ne, and he did not go into fractional length ycles, although he recognized that fractional lengths were a possibility).

Has the character of the price behavior of pig iron changed so that there will be no future fluctuations brought about by the free play of supply and demand?

Let me quote from Benner on the character of prices and price changes:

"I will record here some axioms which must be admitted because they are self-evident.

"That prices are high when they are above the cost of production on a declining market.

"That prices are low when they are below the cost of production on an advancing market.

"When the price of an article declines below cost, production will diminish until demand increases and prices advance.

"When the price of an article advances above cost, production will increase until demand ceases and prices decline.

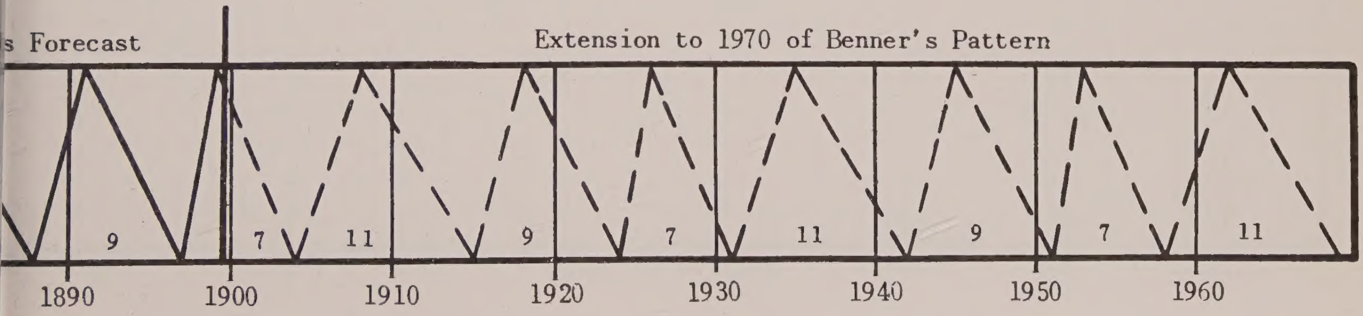
"And that the cost of production is the wages of labor, interest on capital, and wear on land and machinery.

"When the price of pig iron is thirty dollars per ton, it may be either high or low, and like a certain game with cards, the points depend on the trumps that are out.

"If the cost of production is above on a declining market, then thirty dollars per ton is high: if the cost of production is below on an advancing market, then thirty dollars per ton is low."

These are classic rules. Applying them to the situation is essential to anyone interested in forecasting pig iron prices (or indeed, any commodity prices) just as a knowledge of the 9-year cycle is essential. These rules measure some of the "other factors" that we so repeatedly caution you to be aware of. In fact, the "other factors" *and the cycles* work together to create the pattern that actual prices follow.

At the present time the rise in the annual average price of pig iron appears to have stopped. The 9-year high on the Benner cycle comes at 1962, followed by a 7-year decline to



1970.

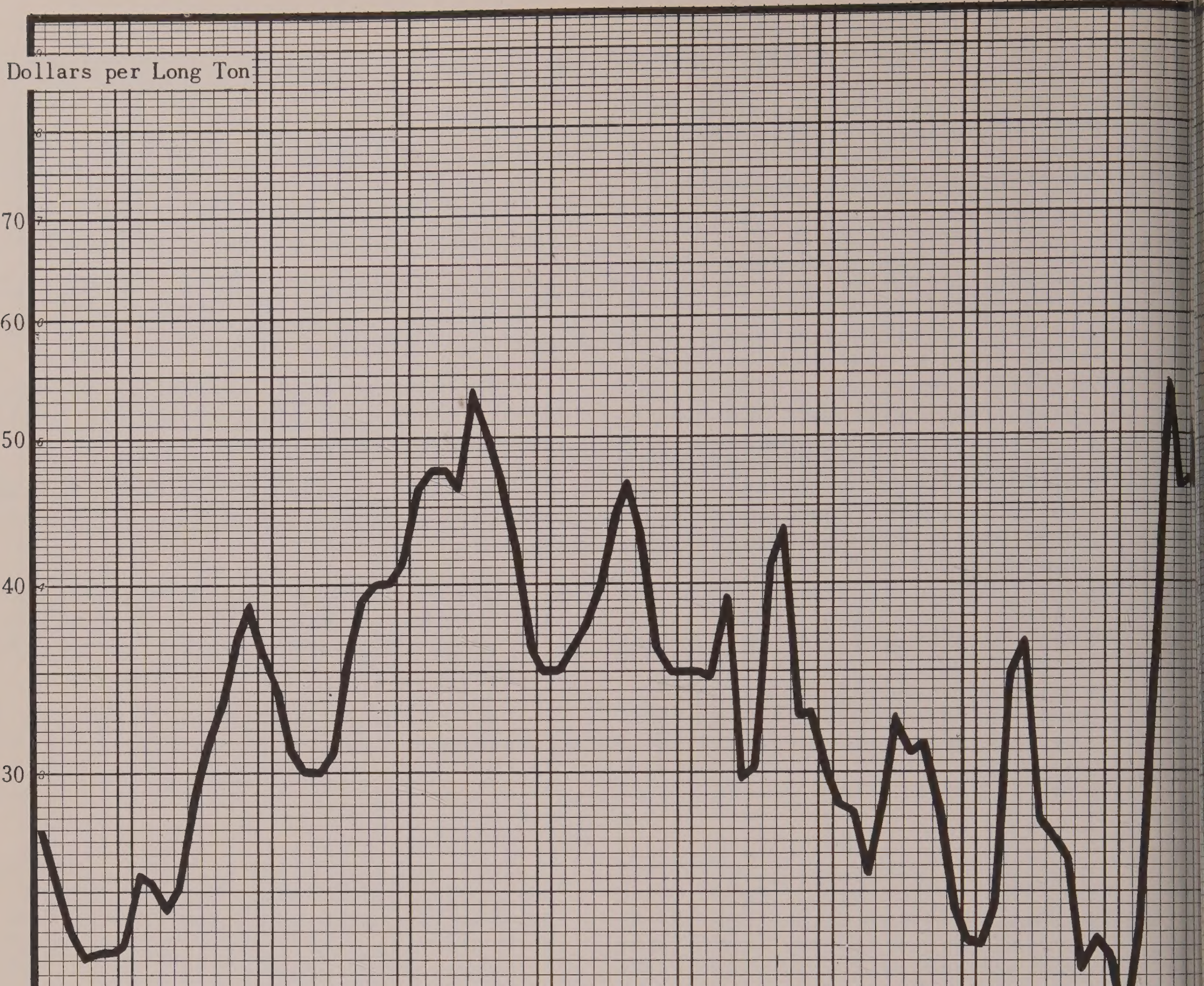


Fig. 3: The Record of Pig Iron Prices in the U.S.A., 1784--1960

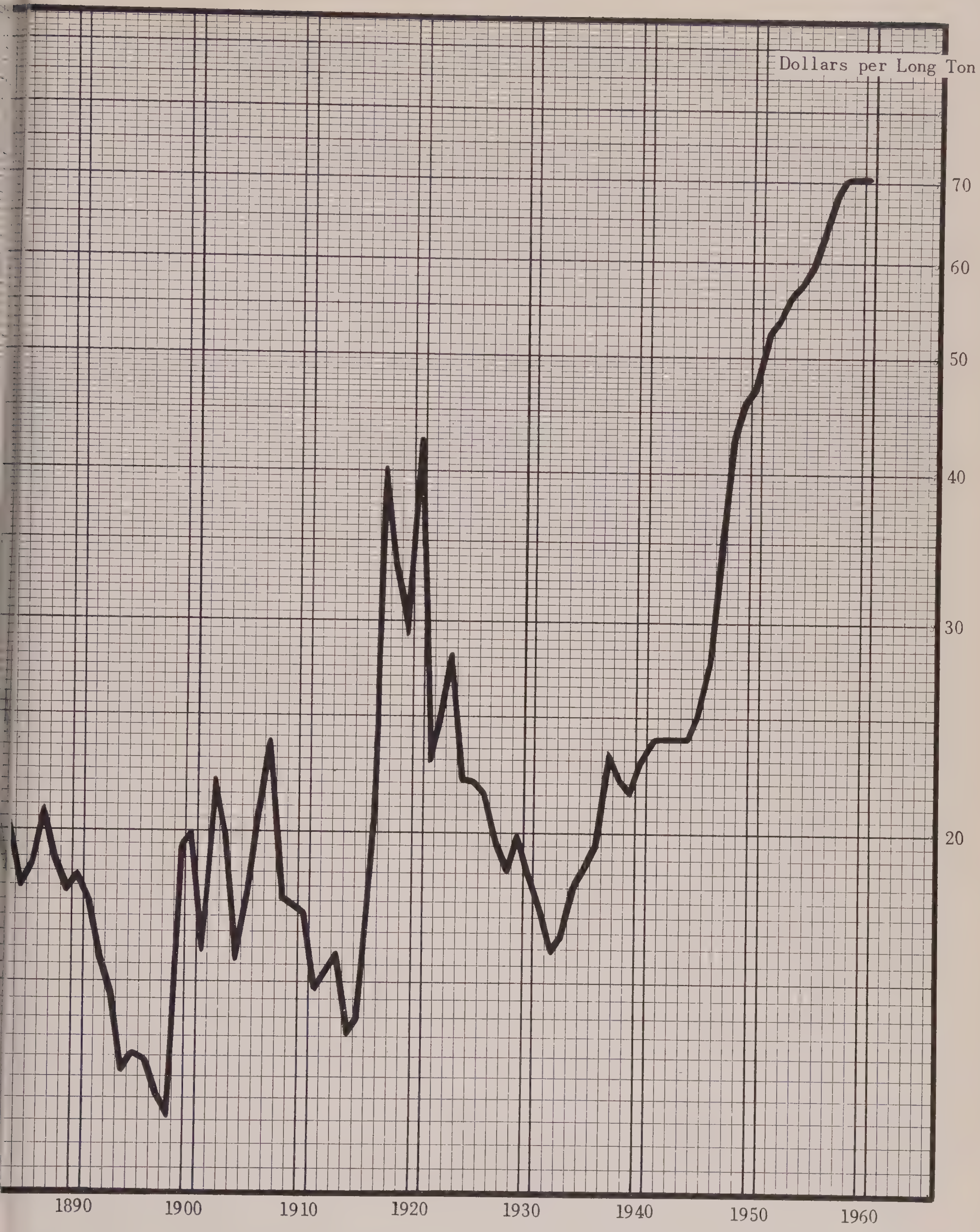

Dollars per Long Ton
70
60
50
40
30
20
1890
1900
1910
1920
1930
1940
1950
1960

Table 2

THE RECORD OF PIG IRON PRICES IN THE U.S.A., 1784—1960

Year	Average Yearly Price	Year	Average Yearly Price	Year	Average Yearly Price	Year	Average Yearly Price	Year	Average Yearly Price	Year	Average Yearly Price
1784	$27.49	1814	$46.04	1844	$28.59	1874	$30.19	1904	$15.57	1934	$18.19
1785	25.60	1815	53.90	1845	32.59	1875	25.53	1905	17.88	1935	18.68
1786	23.55	1816	50.21	1846	30.94	1876	22.19	1906	20.98	1936	19.60
1787	22.56	1817	46.96	1847	31.48	1877	18.92	1907	23.89	1937	23.49
1788	22.67	1818	42.33	1848	28.39	1878	17.67	1908	17.57	1938	22.20
1789	22.67	1819	36.24	1849	24.47	1879	21.72	1909	17.49	1939	21.59
1790	23.12	1820	35.00	1850	23.19	1880	28.48	1910	17.09	1940	23.00
1791	25.63	1821	35.00	1851	23.03	1881	25.17	1911	14.83	1941	24.00
1792	25.30	1822	36.25	1852	24.50	1882	25.77	1912	15.32	1942	24.00
1793	24.33	1823	37.50	1853	34.82	1883	22.42	1913	15.85	1943	24.00
1794	25.21	1824	39.95	1854	36.63	1884	19.81	1914	13.60	1944	24.00
1795	28.88	1825	44.44	1855	27.75	1885	17.99	1915	14.01	1945	25.02
1796	31.25	1826	46.66	1856	27.18	1886	18.71	1916	20.26	1946	27.64
1797	33.35	1827	42.83	1857	26.34	1887	20.93	1917	41.31	1947	34.86
1798	36.65	1828	36.33	1858	22.19	1888	18.88	1918	33.25	1948	42.85
1799	38.75	1829	35.00	1859	23.33	1889	17.76	1919	29.16	1949	45.89
1800	35.79	1830	35.00	1860	22.70	1890	18.41	1920	42.53	1950	47.15
1801	33.92	1831	35.00	1861	20.26	1891	17.52	1921	22.93	1951	52.38
1802	31.08	1832	34.66	1862	23.92	1892	15.75	1922	24.85	1952	53.57
1803	30.00	1833	39.38	1863	35.24	1893	14.52	1923	28.16	1953	56.02
1804	30.00	1834	29.83	1864	59.22	1894	12.66	1924	22.10	1954	57.42
1805	30.92	1835	30.21	1865	46.08	1895	13.10	1925	22.09	1955	59.37
1806	35.75	1836	41.20	1866	46.84	1896	12.95	1926	21.64	1956	63.55
1807	39.00	1837	43.56	1867	44.08	1897	12.10	1927	19.68	1957	68.28
1808	40.00	1838	32.58	1868	39.25	1898	11.66	1928	18.54	1958	70.06
1809	40.00	1839	33.00	1869	40.61	1899	19.36	1929	20.00	1959	70.06
1810	41.25	1840	30.17	1870	33.23	1900	19.98	1930	18.47	1960	70.06
1811	46.25	1841	28.54	1871	35.08	1901	15.87	1931	17.35	1961	
1812	47.50	1842	28.29	1872	48.94	1902	22.19	1932	15.87		
1813	47.50	1843	25.54	1873	42.79	1903	19.92	1933	16.47		

This record of pig iron prices is adjusted by various conversion factors to keep it as nearly homogeneous as possible. For example, the figures currently published by the *Survey of Current Business* of the composite price of pig iron are f.o.b. factory prices. A freight adjustment is added to the published figures to convert them to the previous basing point level.

All figures are dollars per long ton.

the 1969 low. The high in the regular zigzag type 9.2-year cycle the Foundation isolated in pig iron prices comes about 1964. That is, cycle-wise, we are in an area of high prices in pig iron. Toward the end of the decade, cycle-wise, we may be in an area of low pig iron prices. This will be true particularly if the conditions of the price rules outlined by Benner are satisfied. To fulfill the cycle, prices in the general area of 1969 would have to be lower than they are at the present time.

Benner on Panics

One chart by Benner seems to recur more often than the others. This chart combines a record of financial panics with pig iron prices. A tracing of the chart as it appears in Benner's book is shown as Figure 4. Benner showed the two series in the same scale as he figured two pig iron price cycles in each panic cycle, and also the low pig iron years coincide with the low general business years. The pig iron price cycles total 27 years, the panic cycles total 54 years. To quote Benner:

"Commencing with the commercial revulsion of 1819, we find it was eighteen years to the crisis of 1837; twenty years to the crisis of

57; and sixteen years to e crisis of 1873—making e order of cycles sixteen, ghteen, and twenty years d repeat. The cycle of enty years was completed 1857, and the cycle of xteen years ending in 1873, s the commencement of the petition of the same order. takes panics fifty-four ars in their order to make revolution, to return in e same order; the present cle consisting of eighteen ars will end in 1891, when e next panic will burst upon us with all s train of woes."

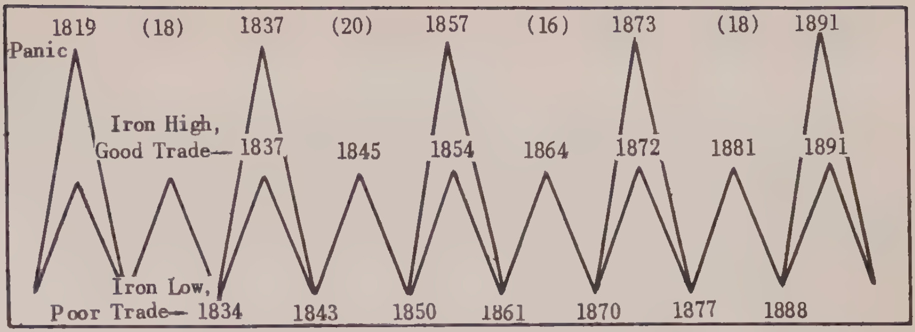
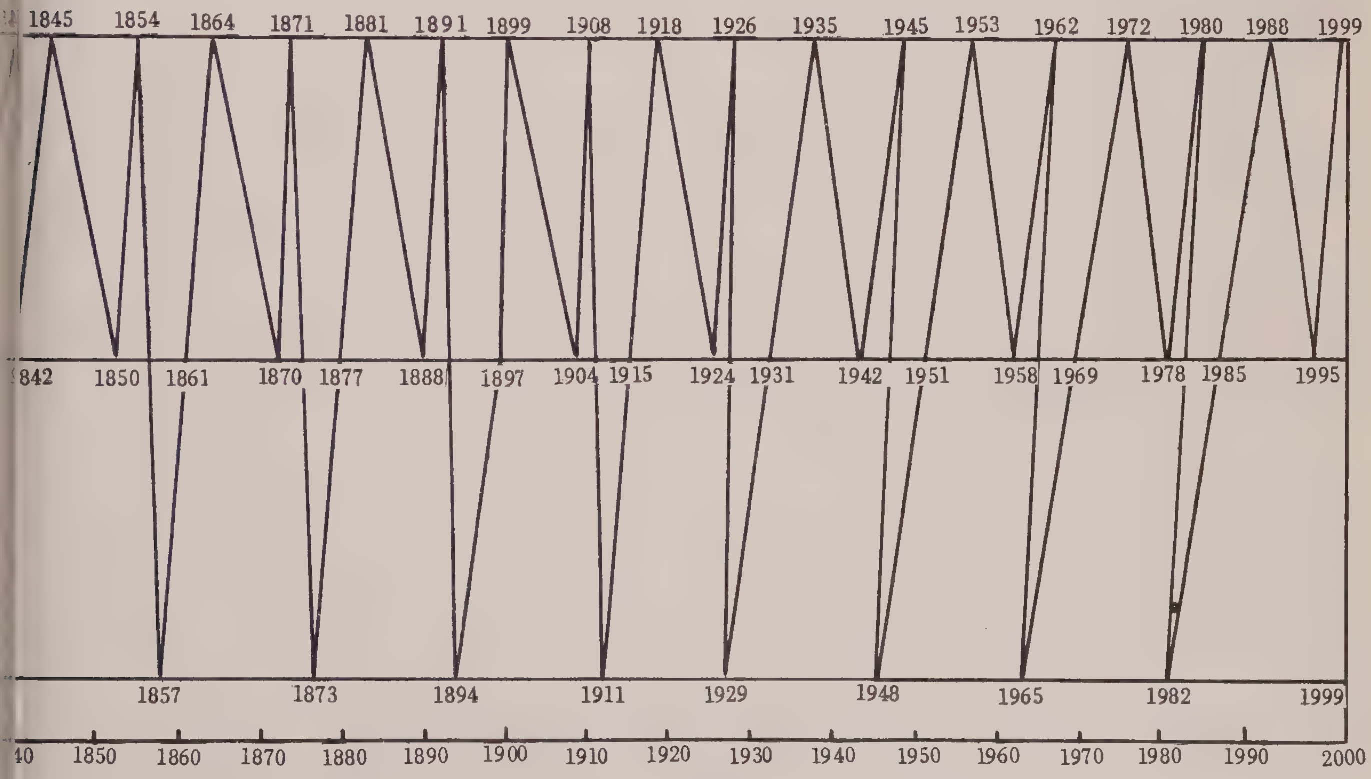


Fig. 4 Benner's Original "Panic" Chart

Bringing the panic series up to date we ave 20 years from 1891 to 1911; 16 years to 27; 18 years to 1945; 20 years to 1965. Like e pig iron cycle, Benner's panic cycle may e revised in the light of later actual experience. This does not detract from its orig- al value, however.

These charts, including extensions of the cycle, keep appearing from time to time but they are only rarely correctly identified as being Samuel Benner's work. One of the most common forms in which the current version of the extension of Figure 4 appears is shown on Figure 5 below. It is a shame that his name gets dropped from the charts because his forecasts worked over a longer period of time and with a greater degree of accuracy than any that we know about.



ig 5 A Modified Extension of Benner's "Panic" Chart

BIOLOGICAL CLOCKS IN HUMAN BEINGS

The story is told of a Cambridge University soccer star who had an injured knee. Every nine days this knee developed hydrarthrosis (water in the joint cavity). This happened so regularly that the team's schedule was actually arranged to avoid matches on the days when the star's knee would be sore. Medical annals contain many cases of unexplained regularly recurring symptoms.

Dr. Curt Richter has an explanation for these mysterious periodic illnesses. He is the director of the psychobiology laboratory of Phipps Psychiatric Clinic. For forty years he has been studying periodic illness and working to find the cause. He believes that the evidence points to "biological clocks" as the controlling factor. According to Dr. Richter there is an inherent cycle controlled by a biological clock in each component unit of every organ of the human body.

These clocks usually function out of phase with each other, and their activity (or what might be called their ticking) is not noticed because they all tick at different times.

Occasionally however, a shock, or injury, or some other action may cause several of the clocks to suddenly be "in time" with each other. At this point, the clocks become noticable because when they all tick with a coinciding rhythm, when the periodicity is synchronized, a periodic symptom appears.

Some of the results of Dr. Richter's work is reviewed in the April 1961 issue of the *John Hopkins Magazine*. In addition to the study of patients, and the records of over 500 cases of evidences of periodic illness, Dr. Richter has done considerable experimental work with the Norway rat—an animal whose physiology is comparable to ours.

First of all, the normal cycles of various activities of the rats were studied. For example, rats begin a daily exercise period at remarkably regular times. Even when the hearing, sight, or smell of a rat is interfered with, it usually continues on the same daily routine of exercising. Variations are usually consistent, as in the case of one rat that ran twenty six minutes earlier every day—rarely missing by more than a minute or so.

The next step was to try by various means to alter the timing, slow down, stop or reset the clocks that controlled the exercise activity. In this respect, working with the rats, Dr. Richter had considerable success. He has even found the location of some of the clock mechanisms. He has learned how to stop the clocks in cases of abnormal behavior, and to reset the clock to induce regular and usual rat activity. But the most interesting result of his work is the discovery that cycles produced by interference with regular activity in rats are similar in length to cycles in human beings suffering similar periodic diseases.

Out of this research has come various techniques which have been tried to relieve periodic illness. These have mostly had negative results—but the hypothesis suggests two ideas of importance. If a shock produced original synchronization of several clocks, another shock might throw them out of phase again. Secondly, the time in the cycle when the shock is introduced might be of most importance.

The clock idea is important in psychiatry, also. The abnormalities in rats are reduced and the "clocks" reset much as they are in human beings by the use of certain drugs which affect the thyroid gland. That is, mental patients with certain periodic symptoms are relieved by the use of drugs which affect the thyroid gland. Before treatment, these patients show cycles similar to abnormal activity cycles developed by rats whose thyroid gland has been partially removed. The rats are also helped by the drugs.

While some problems are being solved, many more are being created. For example, very little is known about normal cyclic human behavior. The effect of heredity on normal and on abnormal cycles is another question. A very basic question is the actual location and function of these clocks. Dr. Richter has opened a whole new phase of physiology by postulating that these parts all have biological clocks.

M.C.

HE 49.33-WEEK CYCLE IN THE PRICE OF GENERAL MOTORS COMMON STOCK

G. Shirk

Over the period of time for which we have a (1951—1961) there has apparently been esent in the price of General Motors common ock a cycle which has averaged 49.33 weeks length.

This cycle has had an ideal or average rength of 24% of trend at the time of the erage crest. The most recent time of ideal est in the *cycle* was the week ending July 7, 61. The *ideal average cycle* is now on the y down to an *ideal average* low at the last ek of the year.

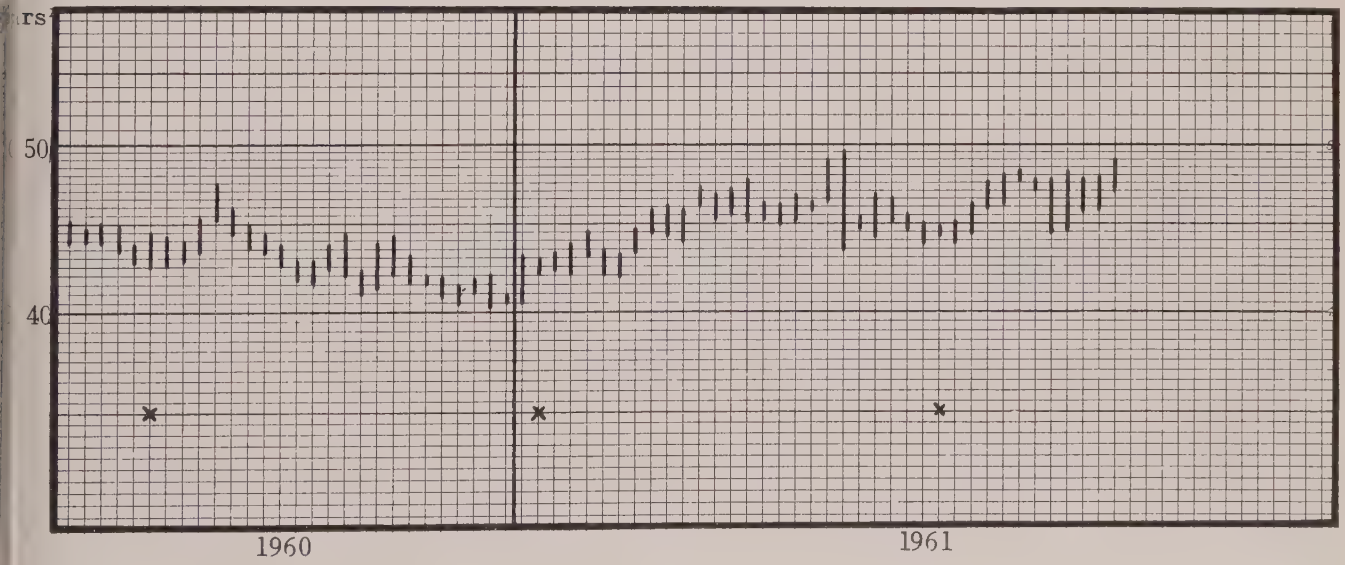
Note well: The reason for the emphasis in e last paragraph is that I am speaking of e cycle, and not the actual price of the ock when I say that there is an average eal low due the last week of the year. Even this one cycle had a perfect performance er the record (which it hadn't) it would ill be only one of many possible cycles and her forces that all operate together to push e actual price up or down.

Figure 1 below shows the actual weekly high d low price since the middle of 1959. The s mark the average turning points of the eal 49.33-week cycle. If you inspect the art carefully, you will see that these times are not necessarily the turning points of the price itself. So do not confuse the cycle which is isolated out of the figures with the figures themselves.

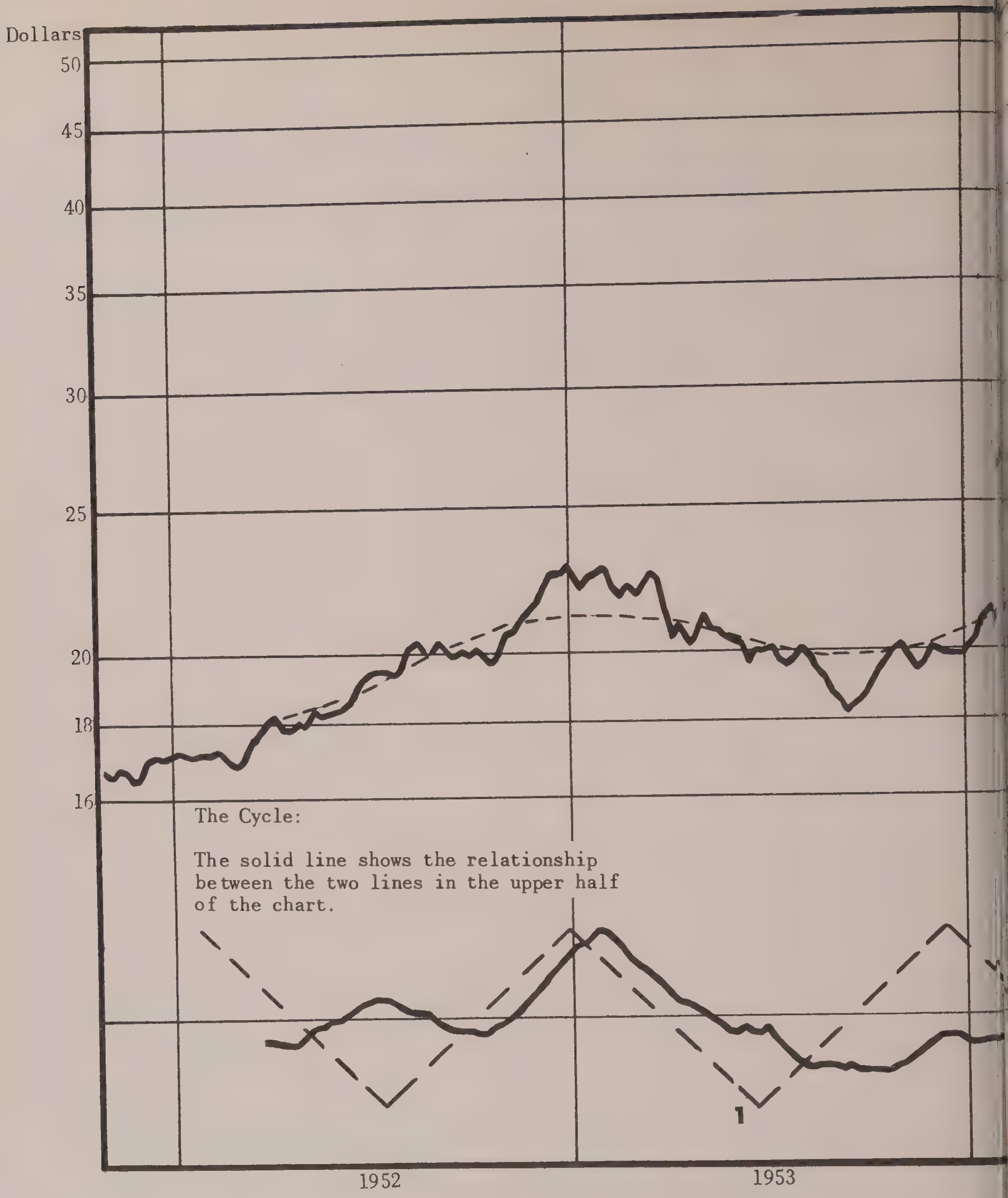
The ideal cycle is a rigid zigzag line. Even if the trend line were added to this zigzag the resulting product would only approximate the actual price line, and then only from time to time.

The complete record of the performance of this cycle is given on Figure 2 on the following pages. The chart shows the actual price record at the top. The actual weekly price (the average of the high and low for the week) is plotted by a solid line. Along with it is shown a long (43-week) moving average.

Underneath is a picture of the cycle. The cycle picture shows two lines, the ideal rigid zigzag, and the line from which it is derived. There have been nine complete repetitions of the wave, counting bottom to bottom. These are marked on the chart by the numbers 1 to 9. While the first wave was reasonably good, (although the first low was high), the second wave was completely missing. Waves number 3, 4, 5, 6, 7, and 8 were all good. Wave 9 was rather shallow. That is, it had a low top. If



ig. 1: Weekly High — Low Price of General Motors Stock



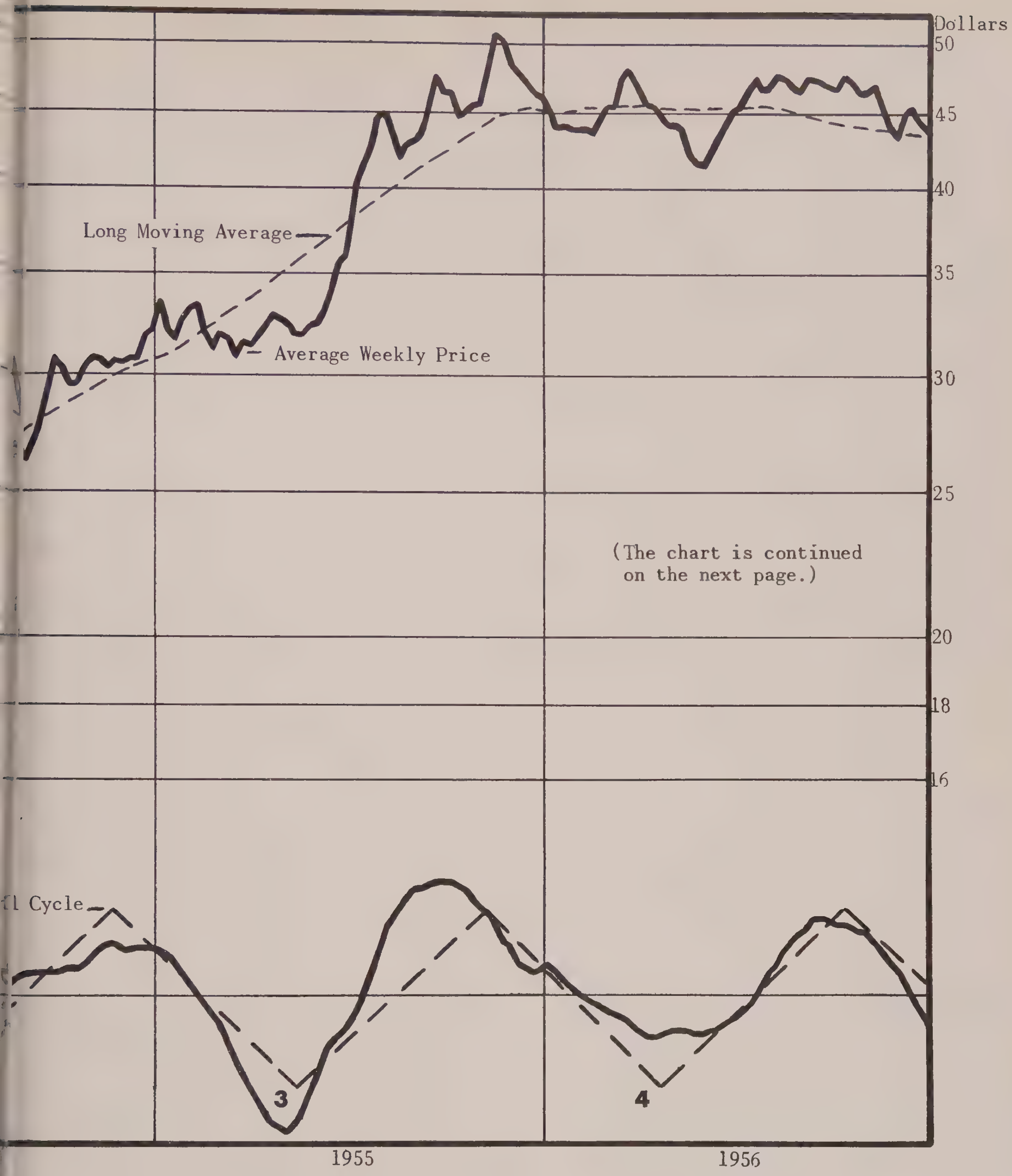
The Cycle:

The solid line shows the relationship between the two lines in the upper half of the chart.

Fig. 2: The 49.33-Week Cycle in General Motors Stock

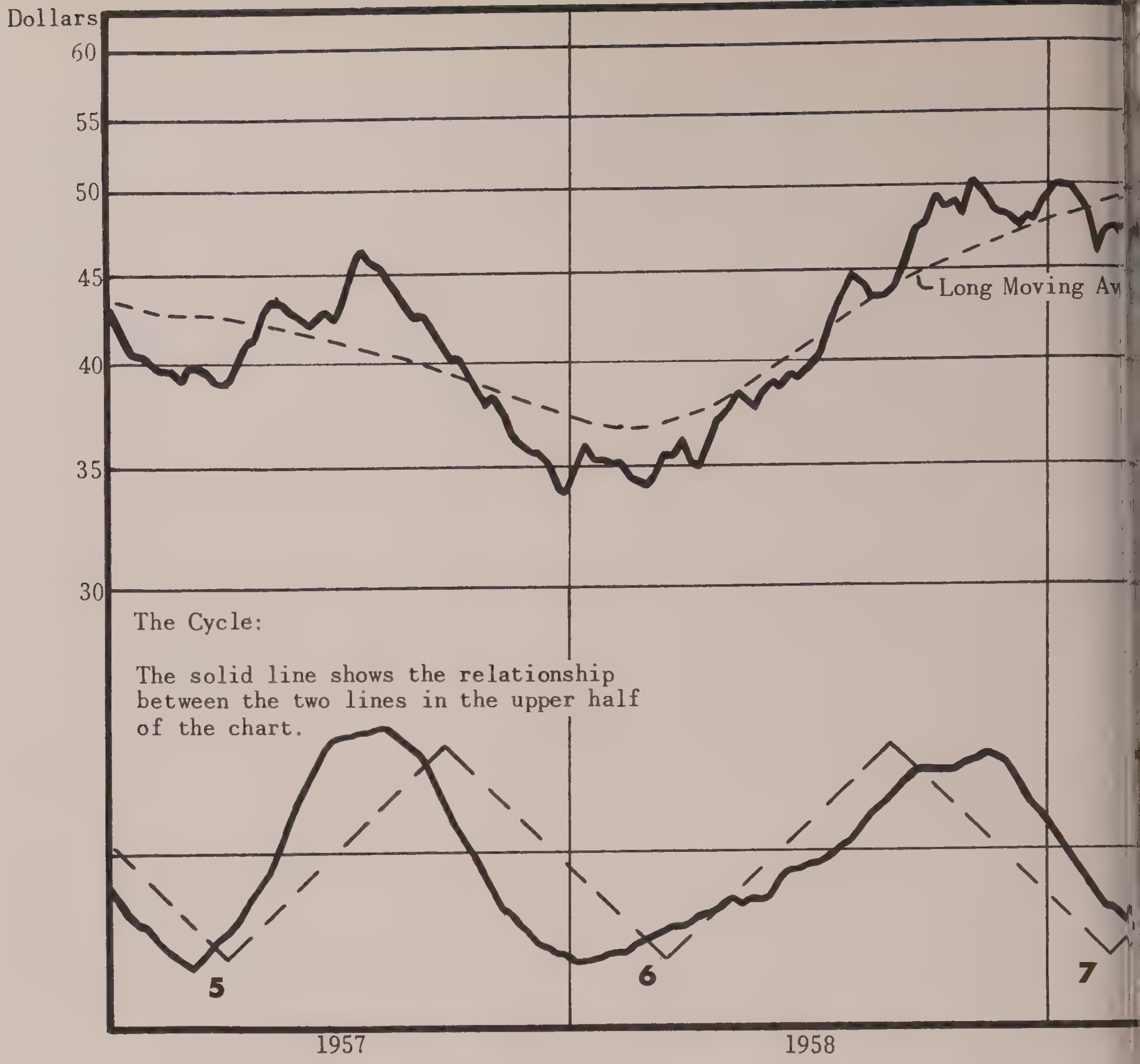
you check above wave number 9 in the price line, you will see that the cycle was even less apparent in the original prices at the time.

So far as we have moved into wave number 10, the line appears to be matching the ave age zigzag. But, as these are weekly figure the apparent current match between the lin gets a chance to change with every week th passes. For rating the performance of the c cle, we consider only the waves for which



have a complete turn. Of the first nine waves, seven were good, and two were not good. As you know, we need at least 15 repetitions before we attach significance to a cycle. But taking what record we have, the fact is that the wave has operated fairly well about 78% of the time since 1951. This in turn means that it was *not* operating—it was wiped out by other factors—22% of the time.

Furthermore, every time a turn of the wave is completed, the odds for its future perform-



The Cycle:

The solid line shows the relationship between the two lines in the upper half of the chart.

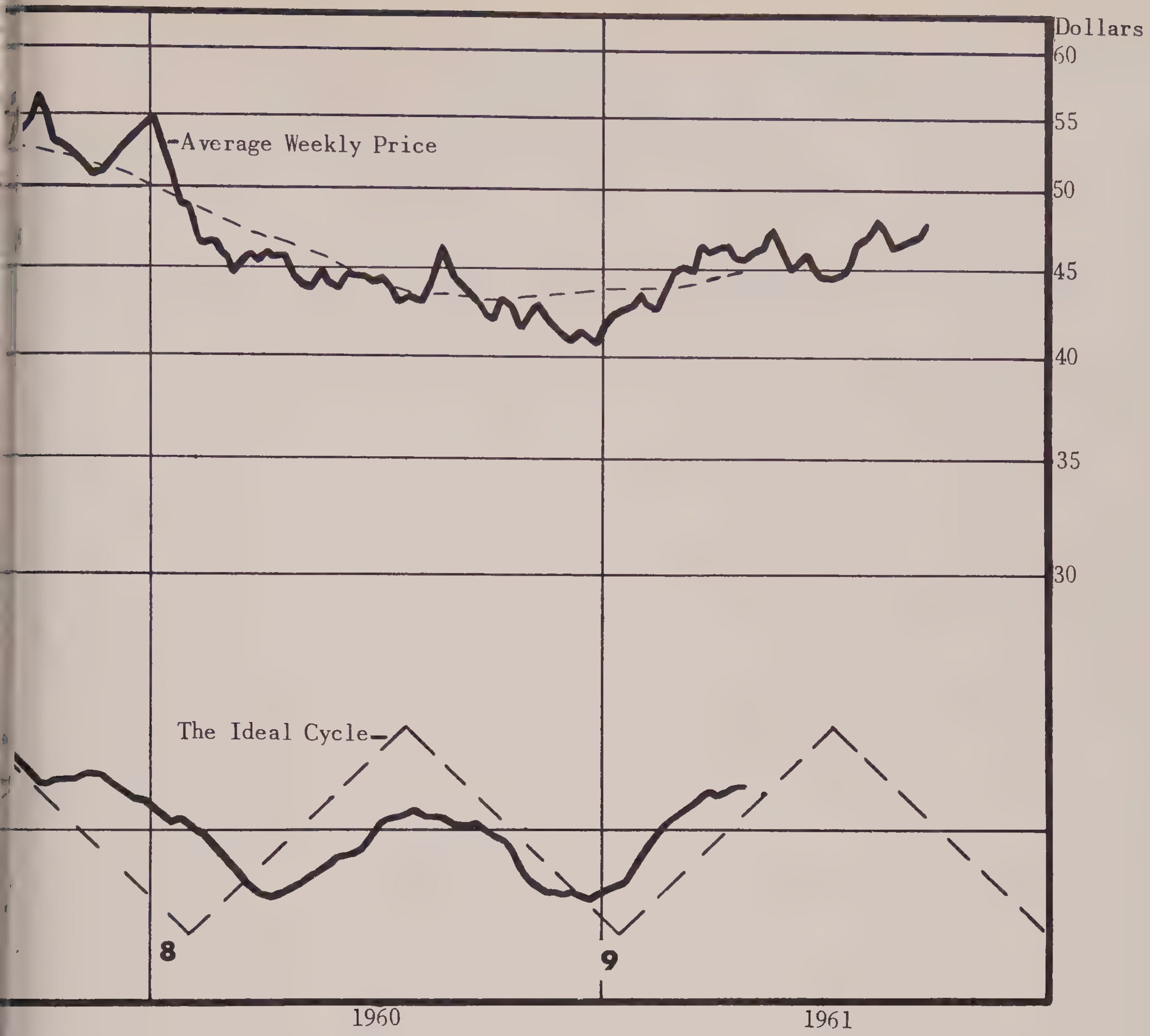
Fig. 2: The 49.33-Week Cycle in General Motors Stock

ance change. If it should happen that wave number 10 is distorted, then the record will show seven good waves, and three poor waves. This result would reduce the percentage to 70. If it should happen that wave number 10 matches the rigid zigzag well, then the rating will go up to 80%. Although up to the present time wave number 10 looks good, the dip in the actual prices at the middle of the year may distort it seriously.

Of course you know that this cycle in the price of General Motors is not a forecast, it is not intended as a forecast, and it should not be used as a buy—sell guide. Even if the cycle is significant (a fact which we cannot yet decide), and even if it is real, and continues to operate in the future as it has in the past, we know that from time to time it will be seriously distorted.

However, as a sort of an academic check on the cycle, it is interesting to compare th average ideal turning points against the actual price. This check is made in the following table. The table is unrealistic in tha the figures are just price figures, and do not include any costs, taxes, or dividends.

Date of Cycle Turning Points		Average Weekly Price	Actual Price Move Down	Up
Jan 25, 1952	High	$17.19		
Jan 11, 1952	Low	19.46	$-2.27	
Jan 2, 1953	High	22.87		$3.41
Jun 26, 1953	Low	20.02	2.85	
Dec 11, 1953	High	19.89		-0.13
Jun 4, 1954	Low	23.96	-4.07	
Nov 26, 1954	High	30.71		6.75
May 13, 1955	Low	31.75	-1.04	



Nov 4, 1955	High	45.50		$13.75
Apr 27, 1956	Low	44.19	$ 1.31	
Oct 12, 1956	High	47.81		3.62
Apr 5, 1957	Low	39.13	8.68	
Sep 27, 1957	High	40.00		0.87
Mar 14, 1958	Low	35.56	4.44	
Sep 5, 1958	High	43.69		8.13
Feb 27, 1959	Low	47.44	-3.75	
Aug 14, 1959	High	55.19		7.75
Feb 5, 1960	Low	48.81	6.38	
Jul 29, 1960	High	43.56		-5.25
Jan 13, 1961	Low	42.56	1.00	
Jul 7, 1961	High	44.50		1.94
Dec 29, 1961	Low	?	?	
			$13.53	$40.84
		Total	$54.37	

It cannot be emphasized too strongly that in the record we have of General Motors prices there have not been enough repetitions of this cycle for us to attach significance to it.

However, I should mention that we have at least one other instance of a cycle about this length. In the sales of Company (G) we found an 11.5-month cycle. The cycle length we have here is 49.33 weeks, which is 11.4 months. A longer record of General Motors prices would enable us to get a more precise length for the cycle in General Motors, and to make a more exact cross-check with the cycle as we found it in the sales of Company G. The General Motors record we have goes back to October 26, 1951. The sales record of Company G went back to 1903. If any member has a weekly record of General Motors prices prior to October 26, 1951, and would lend it to us, we could make a most interesting backcast!

Time and time again . . .

BY GUSTAV GUMPERT

WEATHER WHEEL

Ask any weather man what the weather is going to be like in the year 2000, and he'll say there isn't much telling.

But ask Frank Barton, of Marfa, Texas, and he'll undoubtedly say it's going to be real wet—according to his "Weather Wheel."

The Weather Wheel is a circular chart about four inches in diameter worked out more than 200 years ago by Spaniards in Mexico. It predicts the weather from the year 1750 to the year 2000, and in the eight years Mr. Barton has owned the wheel he claims it has been 100 per cent correct.

The wheel designates each year as either dry, very dry, wet, or very wet. It was given to Mr. Barton, president of a Marfa bank, by a friend, who said it came originally from Mexico. It is designed only to predict the weather in Presidio County.

In fact, in nearby Tom Green County the wheel is about as reliable as flipping a coin. A check of rainfall records kept by the San Angelo Standard Times since 1921 showed the wheel correct nineteen times and wrong eighteen times.

CLIMATE AND CHARACTER

Speaking of weather always reminds us of the famous predictions of Professor Raymond H. Wheeler, who suggested that climate may make the man.

Political systems, wars, theologies, even sexual behavior may be the result of climate, Dr. Wheeler held.

Speaking of dictators, he made this point: "No impressive dictator period has ever developed except during warm and usually dry times." He then runs through the history of the world in brief and demonstrates that dictators do indeed seem to occur during warm, dry times. Professor Wheeler also makes a good case for climate causing wars and revolutions-or at least being correlated with such events.

If his predictions are accurate, we can probably look forward to some social turbulence during the next 10 years. His work was done in 1943; and he concluded, "We have just had the hot drought. It is turning cold, or just has turned cold, and before very long we should be entering a great civil war epoch."

The number of revolutions since 1943 has been remarkably high!

WHEELER CONFIRMED

So far as Wheeler's prediction of a cold wave, his view seems to be confirmed by a recent publication of J. Murray Mitchell, Jr., a U. S. Weather Bureau official.

Mitchell wrote: "The warming of recent decades, especially marked in high northern latitudes and in winter, apparently ceased in the early 1940's, and has since been replaced at most latitudes by moderate cooling."

BIOLOGICAL CLOCKS

Hendrik J. Ketallapper, writing in *Engineering and Science,* adds another note to the many recent comments about biological clocks in nature.

He reports: "These studies have shown that creatures appear to act as though they possess not only timers, but also clocks which may run for days in the absence of any external time signal."

It seems pretty clear that such clocks exist—hundreds of experiments have shown them to be a biological fact. But where are the clocks located? What do they look like? How do they work?

Mr. Ketellapper has this to say: "In plants presumably every cell has its own clock, and the environmental events synchronize all these clocks so that the organism acts as a unit. In animals, many experiments indicate that the nervous system is involved and may be the site of time measurement. However, we have no idea of what the clock looks like or even what to look for. It is not known in what part of the cell it occurs, whether in the nucleus or in the protoplasm. The mechanism of the clock is not known either."

Mr. Ketellapper suggests that the next step science must take is to find one of these mysterious clocks.

The Cycle Workshop

The Time Chart Part 2

The 12-month time chart of temperature highs at San Francisco which I used last month is repeated here:

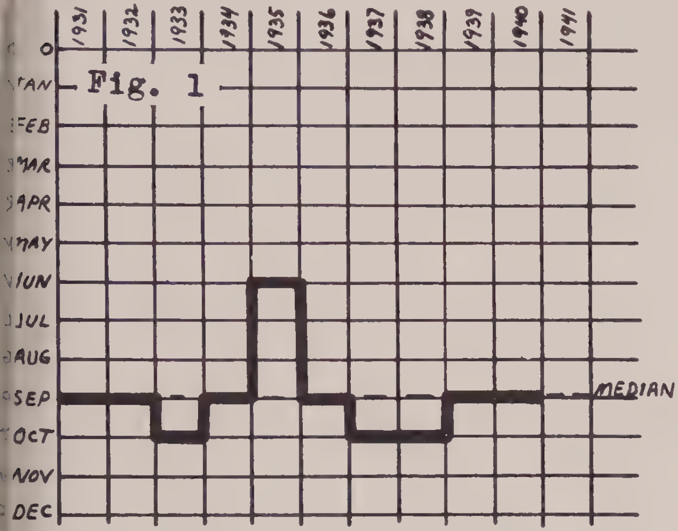


Fig. 1

If the months are numbered (December 1900 is zero), the work is simplified. Here is a table of month numbers for 1931—1940.

Year	1931	1932	1933	1934	1935
Jan	361	373	385	397	409
Feb	362	374	386	398	410
Mar	363	375	387	399	411
Apr	364	376	388	400	412
May	365	377	389	401	413
Jun	366	378	390	402	414
Jul	367	379	391	403	415
Aug	368	380	392	404	416
Sep	369	381	393	405	417
Oct	370	382	394	406	418
Nov	371	383	395	407	419
Dec	372	384	396	408	420

	1936	1937	1938	1939	1940
Jan	421	433	445	457	469
Feb	422	434	446	458	470
Mar	423	435	447	459	471
Apr	424	436	448	460	472
May	425	437	449	461	473
Jun	426	438	450	462	474
Jul	427	439	451	463	475
Aug	428	440	452	464	476
Sep	429	441	453	465	477
Oct	430	442	454	466	478
Nov	431	443	455	467	479
Dec	432	444	456	468	480

The warmest months of the years 1931—1940 in San Francisco would thus have the following month numbers:

Year	Month	Number	Year	Month	Number
1931	Sep	369	1936	Sep	429
1932	Sep	381	1937	Oct	442
1933	Oct	394	1938	Oct	454
1934	Sep	405	1939	Sep	465
1935	Jun	414	1940	Sep	477

This numbering system makes the base number of the first column 360. Position 1 in the first column represents 1 month after the base, or January 1931 as before. Our new grid and time chart are shown in Figure 2.

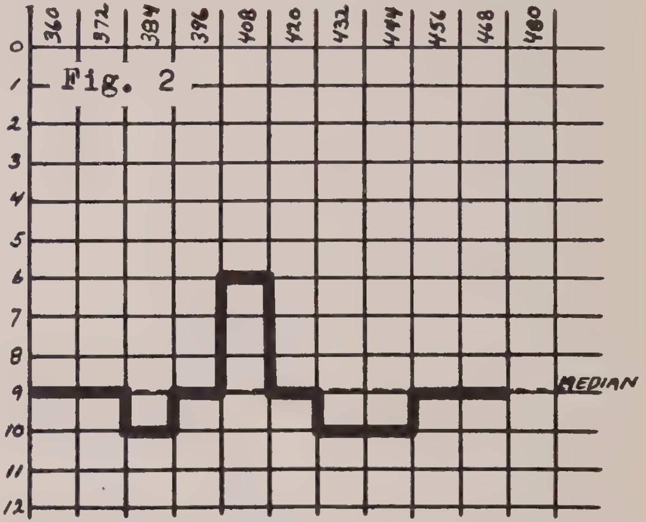


Fig. 2

Note that, because this is a 12-month time chart, each base number is 12 larger than the one before. Note that, because September 1931 is 9 months after base that the bar which shows that this is the month of high is entered just as before on the 9th line from the top, and so on. We have merely exchanged numbers for months, base months for years. Note that the last line of any column of the grid represents the same month as the first (base) line of the next column.

Note also that, although each column as drawn represents only 12 months of time, it could be extended indefinitely forward and backward. The time chart repeated with the grid extended backward to six months before base and forward to 24 months after base is shown in Fig. 3.

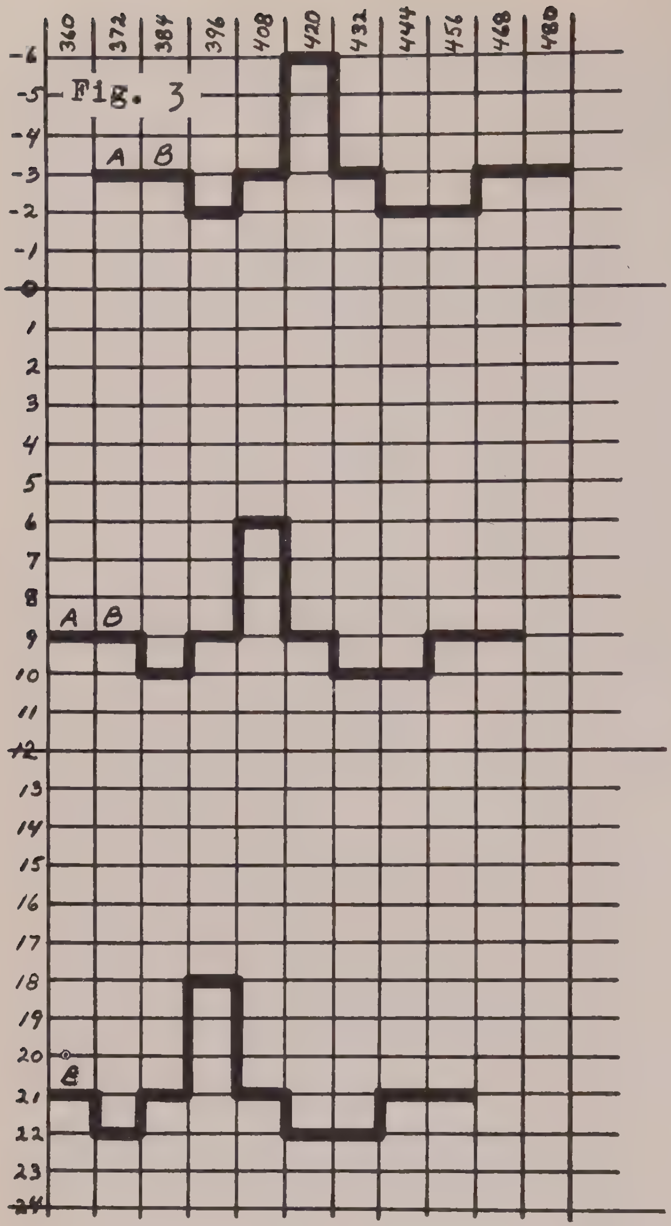


Fig. 3

The first bar in the original time chart, at September 1931 at position 369 (9 months after the first base number, 360) can also be plotted in the second column at position 369 which, in this case, would be 3 months before the second base number, 372. See bar A.

Similarly the high of September 1932 can be plotted as 9 months after base 372, or 21 months after base 360, or 3 months before base 384. All these plottings represent the same point in time; all are labeled B.

Only one other thing needs to be noted: If the length of the time chart and the length of the cycle are not the same, the axis around which the bars oscillate will not be horizontal, but will slope up or down depending on whether the cycle is shorter than the time chart or longer. For example, let us plot our 12-month San Francisco temperature cycle upo an 11-month time chart grid. The successiv base numbers are 11 months apart; the grid i 11 months long; the time chart would look lik the one shown in Fig. 4.

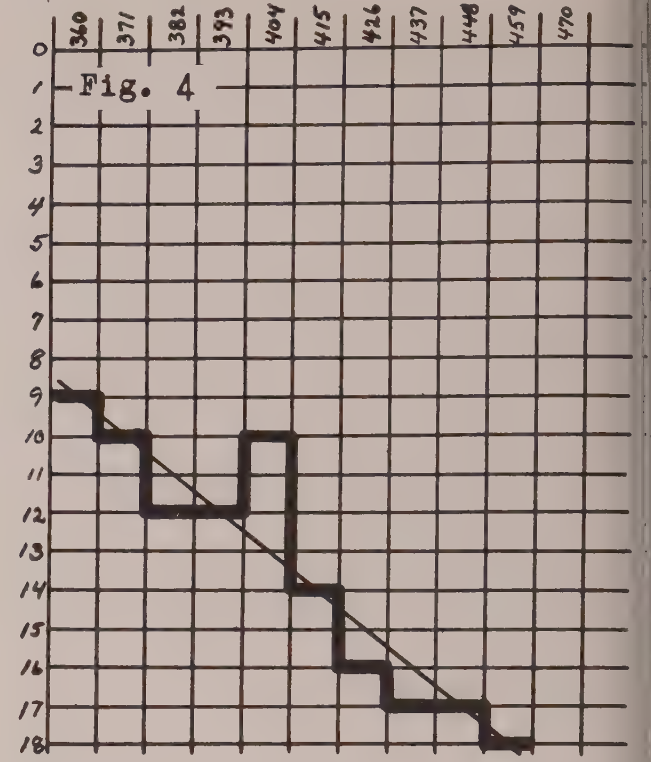


Fig. 4

On a 13-month time chart our 12-month temperature cycle would have looked like Fig. 5.

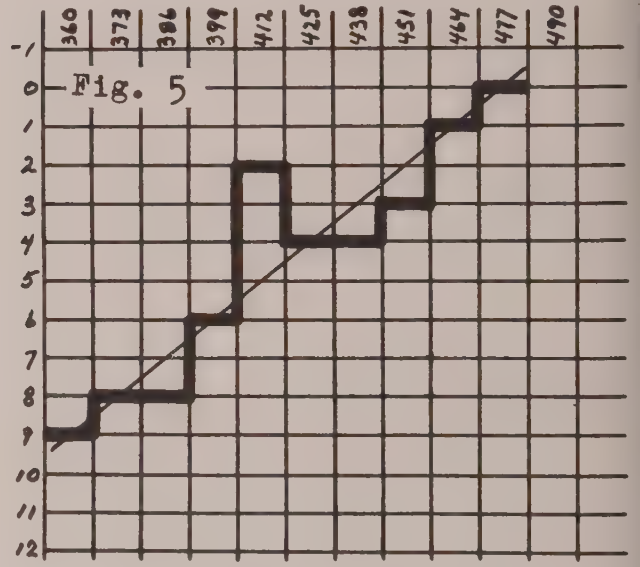


Fig. 5

It thus becomes clear that, from the slope of the line established by the bars of a time chart, one can compute the length of the cycle with great accuracy. Also, by seeing if the slope of this line changes, one can see instantly if the length of the cycle changes, and, if so, by how much. *E.R.D.*

LETTERS:

Dear Mr. Dewey:
I have read and reread your Director's Letter on the current danger. I cannot but agree with your thinking, and wish that more widespread circulation of your philosophy were possible.

Lake Jackson, Texas N. D. Griswold

* * *

Sirs:
1. I am interested in statistics of cycles and their causes.
2. I do not want your *opinions* on politics.
3. I disagree with you.

Cambridge, Massachusetts E. S. Stimpson

* * *

Dear Mr. Dewey:
I wish to commend your letter in the September 1961 issue of *Cycles*. You are so right: the horse died in 1945—why whip a dead horse?

The problem now is what is best for the future. While the answer is certainly not a simple one, it is certainly an obvious one—and certainly does not suggest additional mistakes to offset earlier ones. . .I don't know if your suggestions are the right ones or not, but I do know that our strategy must be a POSITIVE one, based on real "rights" and consequently a *real* position of honor when we start to fight . . .You never win a football game by just "holding the line," nor a chess game through "checkmates"—The games of life can be just as straightforward with clearly defined and clearly recognizable "right" objectives (recognizing there will be differences of opinions and there will be some who will resort to foul play).

It is about time that we start some positive thinking in our foreign affairs and not just try to "hold the line" while our opponents gather bulldozers to crush our team and end the game, as they publicly announced as their intention in San Francisco some 20 years ago when the United Nations was born.

I would like to see your September letter, and supplementary positive thoughts, on each and every U.S. Congressman's desk. More such plain speaking is needed.

Chicago, Illinois L.E.W.

* * *

Dear Mr. Dewey:
I disagree with your comments on the international situation as stated in the August *Cycles*, and I disagree even more with your say in the September issue. Although this editorial commentary seems out of place in *Cycles*, I certainly do agree that the situation is so serious that it should be discussed anywhere and everywhere that the opportunity arises.

Your conception of the "World-in-a-nutshell" is a helpful method of analysis. However it contained an error of omission which indicated an unrealistic attitude. One of the most significant facts of the situation is that the head of one of our neighbor "families" has said that he will bury us. He is acting as though he means it. He has his guns loaded and aimed. Why not mention this? Was it a vain hope that this unpleasantness might disappear if you pretend not to notice it? This is not the kind of a world we live in. If you analyze the political situation as carefully as you analyze cycles, you would end up with a different story.

Your September article also contains many good points, but the wrong conclusion. I will use your own technique to point out that your proposal is characterized by a succession of errors, as follows:

Mistake Number One—HINDSIGHT is always easy. Anyone can point out mistakes after they have been made. The real problem is, what *will* your proposed solution look like ten years from now?

Mistake Number Two—Cycles can be influenced by human wishes. You do not say this, but the implication is clear. I do not think that we are any more capable of changing the cycles of war than we are of changing the cycles of winter and summer.

Mistake Number Three—That war can be avoided, if we only try hard enough. This idea is inherent in your argument, although not stated specifically. As a matter of fact, you do state the contrary—"We are in a dog-eat-dog world in which war is the natural state." The actions you recommend would only make sense if they really did succeed in preventing war for a long time. If your recommendations succeed only in postponing war then that war can only be worse when it does come.

The solution to the problem of war can only be obtained by the same method that is used to find the solution of any problem: first discover the cause, then discover the cure, and then apply the cure. At present, I do not believe we know the cause, much less the cure. Consider a simple human problem—famine. The cause and cure have been known for thousands of years, but even now the cure has not been applied by the majority of the human race.

Our present choice is not between war and peace, but only between victory or defeat.

Mistake Number Four—Your ridiculous comparison of Berlin with Chicago, New York, etc. These *are* American cities. Berlin is *not* a Russian city.

Mistake Number Five—The over-emphasis on Berlin as a separate problem, and the under-emphasis of the overall problem of Russian imperialism. My own opinion is that Berlin and its 2,500,000 free people *are* worth fighting for. Discounting this, Berlin is of minor importance in the whole picture. But the Berlin issue, as one more step in Russia's efforts to push us to our grave, is vitally important. You say (No. 13) that Russia will *never* really give in on West Berlin. This is probably true. If you look beyond the present, you should see that Russia will *never* give in until she does bury us (except as a result of defeat in an all-out war). You are deluding yourself if you think that our giving in on this point will result in improvement in the world situation.

Although I disagree with some of your statements, I approve of your having stated your position publicly and forcefully. This critical problem is one which should be thoroughly and freely discussed by all Americans.

Bedford, Virginia Karl E. Balliet

* * *

Dear Editor:

The September 1961 Director's Letter just goes too far afield. Let's have more "Cycles."

Camp Kilmer, New Jersey Col. F. G. Rothwell

* * *

Dear Mr. Dewey:

Why not propose a face-saving, horse-trading deal relative to the Berlin and the United Nations? It might be proposed that the Berlin residents decide their own destiny, on the basis that the Western nations are evacuating the city no matter what decision they arrive at and with assistance for those who wish to leave.

On the other side of the deal, we evacuate the United Nations from our shores, either abandoning it completely as far as we are concerned, or setting it up where it could not engage in spying and all the associated policing (of its personnel) would not be necessary.

Burlingame, California F.H.

* * *

Dear Editor:

The September Director's Letter belongs somewhere else (like the front page of the *Times*). But I'll forgive you this mistake in editorial judgment for one reason: It was a relief to read some one person who dared to differ with the obviously organized press campaign on Berlin. In the beginning but no one disagreed—and son, that ain't natural! I think you started some *honest* discussion of the problem, too. Now, how about the cycles?

Pittsburgh, Pennsylvania A.O.

The Geisinger Indicator

Dear Mr. Dewey:

I run into remarks that people cannot read the Geisinger Indicator, and have written a short explanation:

One should consider themselves as standing in the Present, asking what the Future Probabilities of Business Trends are. If the Geisinger Indicator, as projected ahead, is over plus 2, then the underlying forces are pushing upward toward a BOOM. If between plus 2 and minus 2, then conditions are not apt to change much from the Present. If below minus 2, then the probabilities are that business will head Down.

The application should be in the matter of extending or contracting Business Risks, not in Buying and Selling attitudes. For instance, if one's inventories were in balance during a normal period, then an Up signal should indicate extending inventories to cover higher sales, and vice versa. One should not read too much into smaller movements. Most losses occur from being extended *beyond* a change in trend. The Geisinger Indicator is a valuable tool as a check upon other opinions.

But we should try to get the readers to visualize *themselves* doing the forecasting. They know their own businesses best.

Troy, Ohio Robert Geisinger

the november CYCLES round-up

n this month's Round-Up we review the current status of the eight leading indicators." These series *tend* to turn ahead of business in eneral. This characteristic is just a tendency, and does *not* mean hat they *all* turn ahead of general business in *every* instance. But does mean that if they are all looking good, the outlook is bright. e do not as yet have cycle studies of all the series, but charts for ne full list are presented.

YCLES IN THE "LEADING INDICATORS"

Our September 27 review of the eight lead-ng indicators yielded the following result. s you go over the charts (to which the latest lots have been added) you may well disagree!

eries	September 27 Rating
ew Orders for Durable Goods	good
holesale Prices - 22 Commodities	neutral
umber of New Incorporations	good
iabilities of Failures	poor
esidential Building Contracts	good
onresidential Building Contracts	good
ours Worked in Manufacturing	good
tock Prices	good

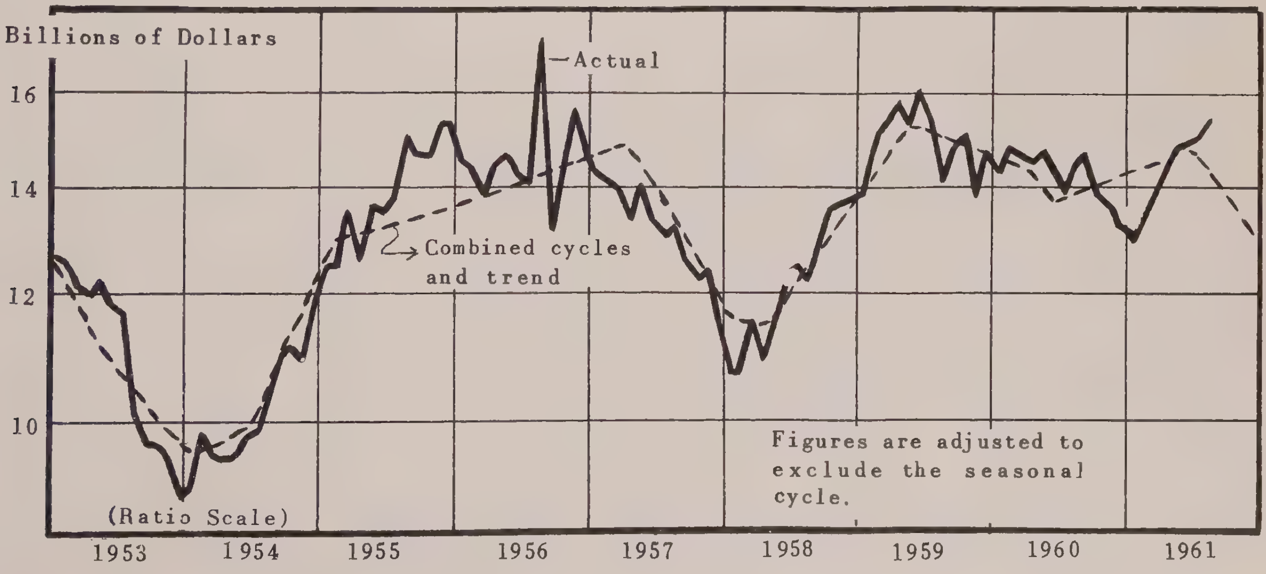
Last month (August 23) the total for all Eight Indicators was plus 7. This month the rating for Liabilities of Commercial and Industrial Failures went from good to poor. This change reduced the total to plus 5.

I am counting the ratings very simply. Good is plus 1, neutral is 0, and poor is minus 1. So far this year the totals have been:

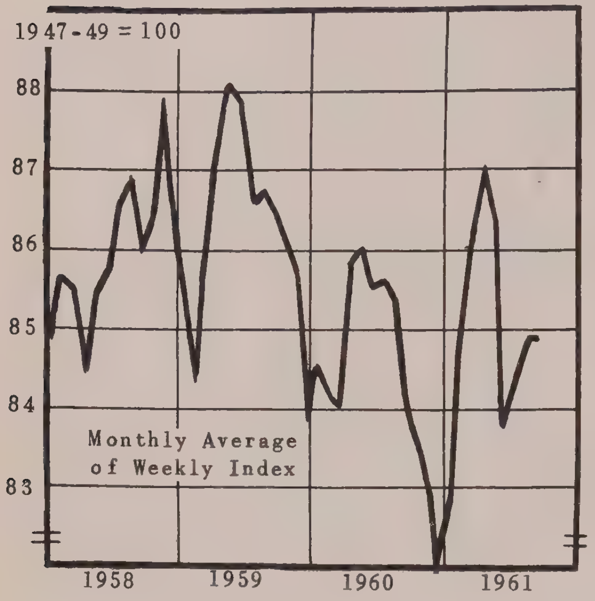
January	31	-1	June	28	4
March	1	0	July	26	3
March	29	1	August	23	7
April	26	3	September	27	5
May	24	5			

E.R.D.

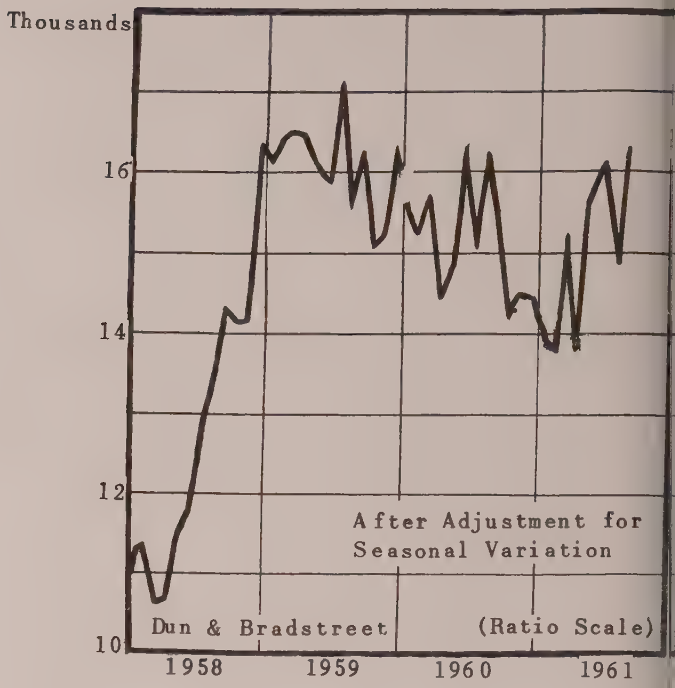
ANUFACTURERS' NEW ORDERS FOR DURABLE GOODS



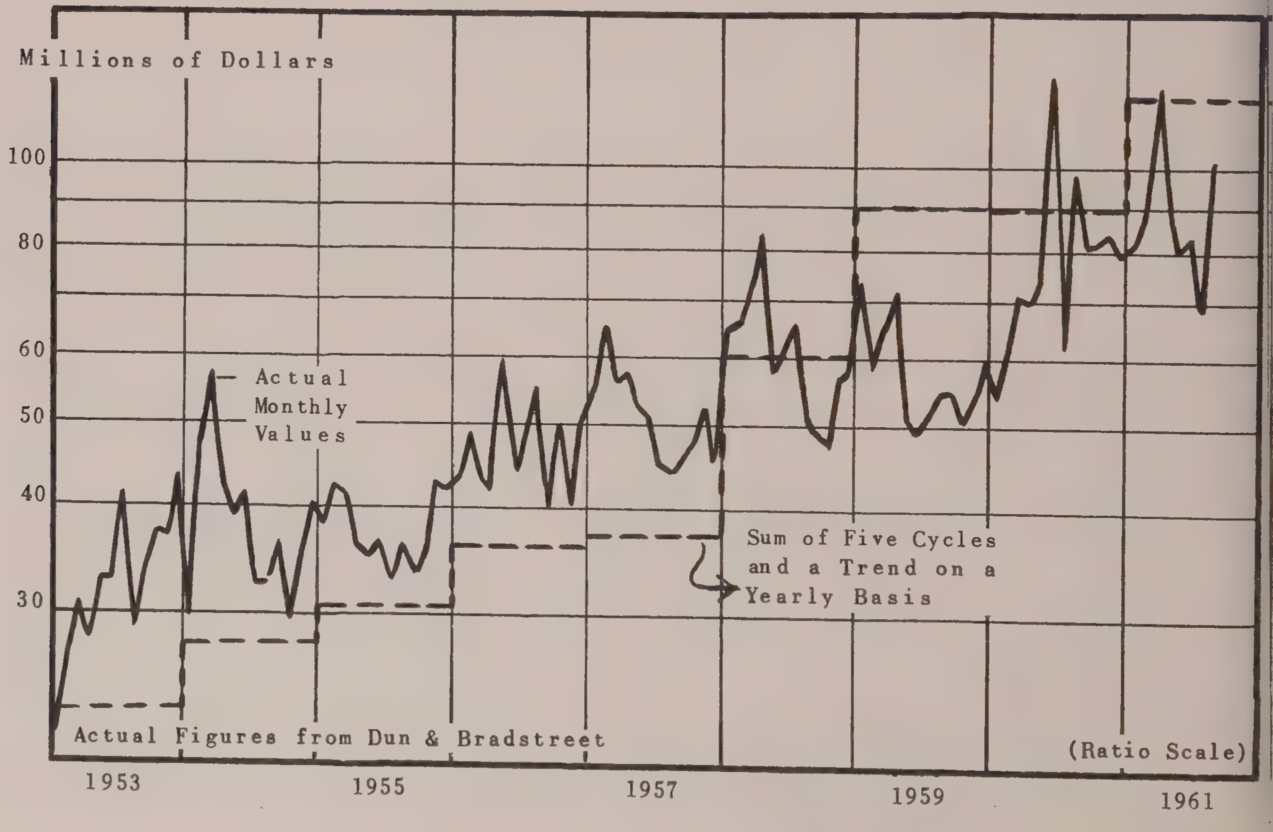
THE B.L.S. PRICE INDEX OF 22 COMMODITIES



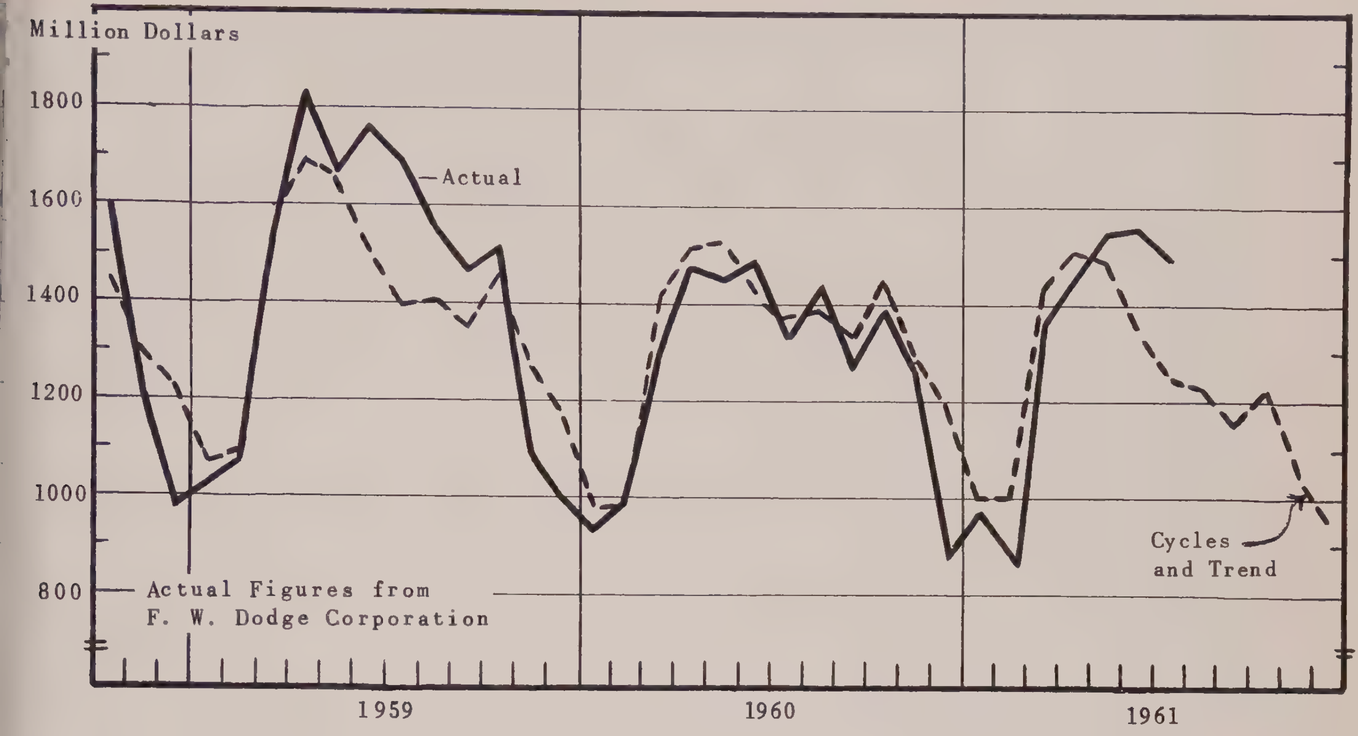
NUMBER OF NEW INCORPORATIONS



LIABILITIES OF COMMERCIAL AND INDUSTRIAL FAILURES

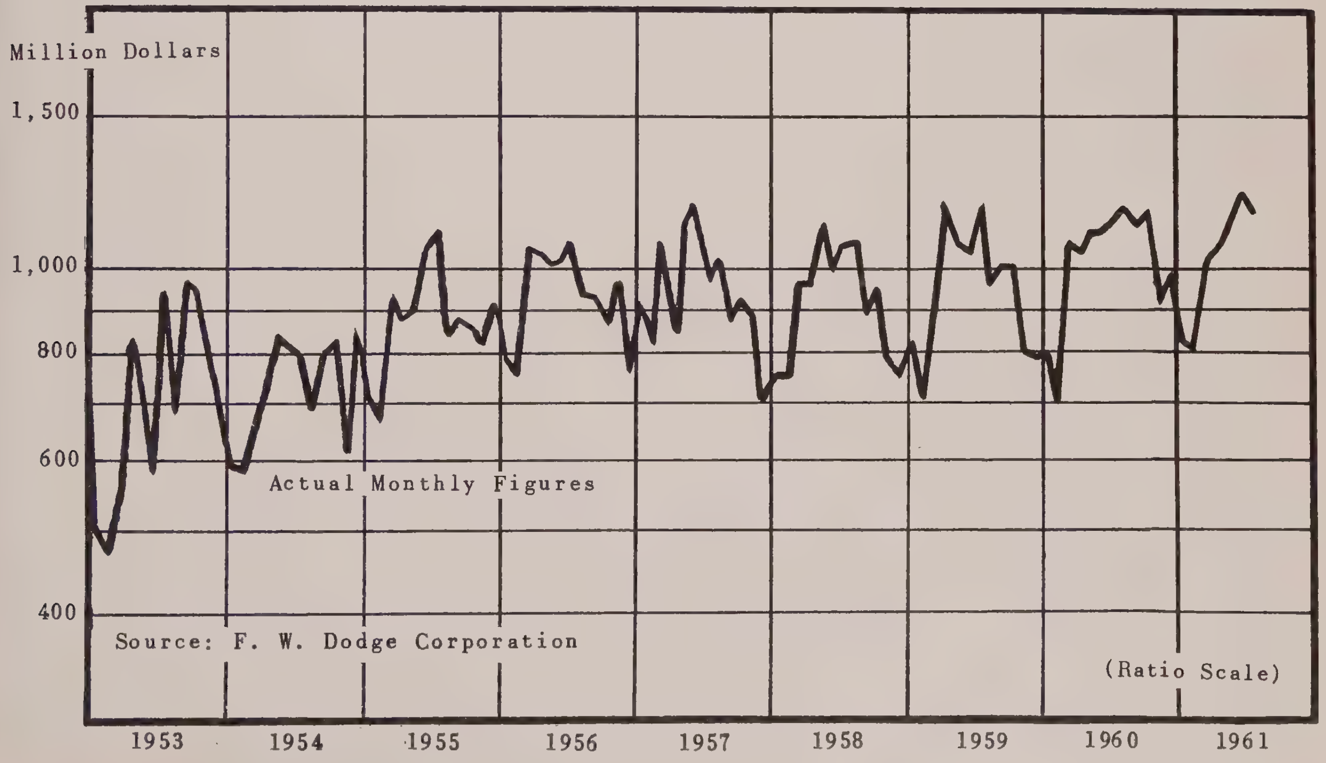


ESIDENTIAL CONSTRUCTION CONTRACTS



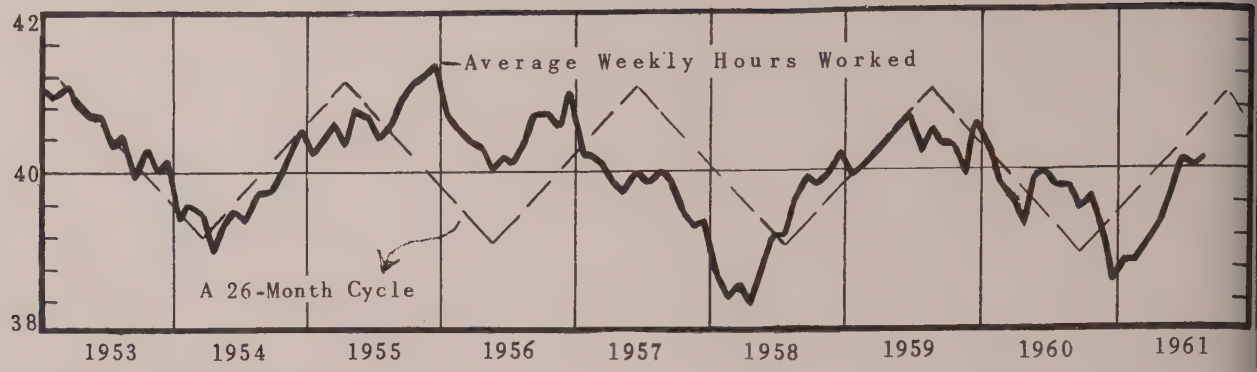
Actual Figures from F. W. Dodge Corporation

NONRESIDENTIAL CONSTRUCTION CONTRACTS

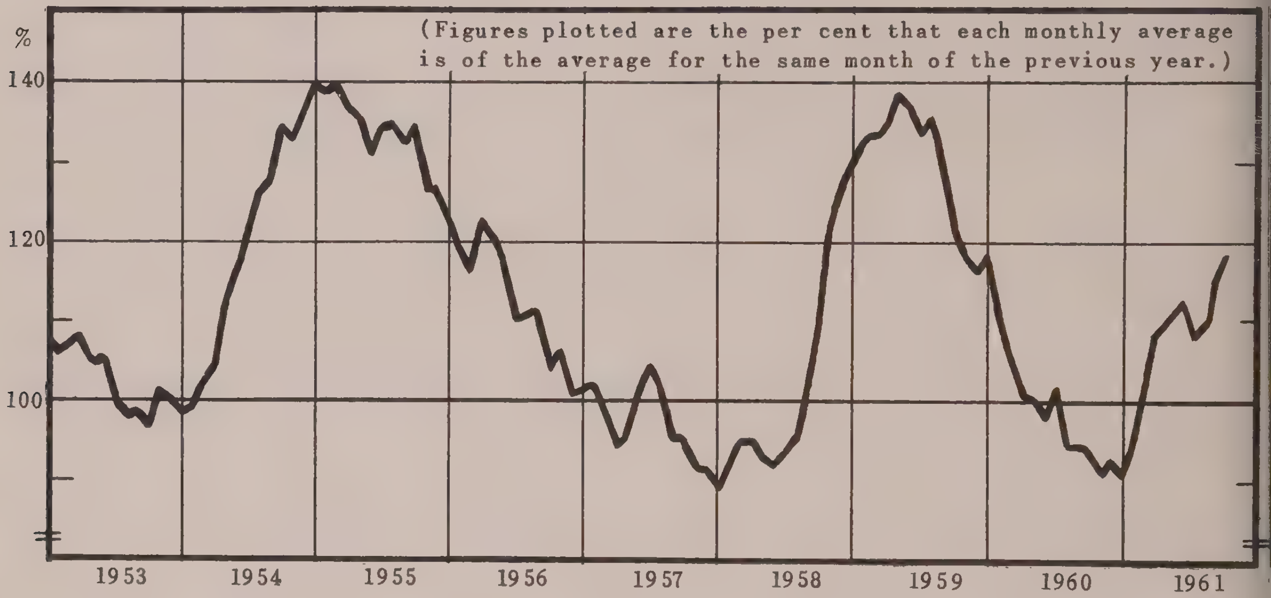


Source: F. W. Dodge Corporation

AVERAGE WEEKLY HOURS WORKED IN MANUFACTURING



DOW JONES INDUSTRIALS: THE ONE-YEAR PER CENT CURVE



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THE GEISINGER INDICATOR

Slowing - Up

The seasonally adjusted Index of Production (1957 = 100) as computed by the Federal Reserve Board went up in August to 112.8.

The Geisinger Indicator, based on the August figures available today, was down a bit, but was still at a high level. The value for May (January 1962 when advanced) was 3.40.

The First Difference Indicator for July was down a bit to 1.83. This figure is based on the August F.R.B. Index, and shows there has been some slowing of the recent sharp rate of advance.

The Modified Geisinger Indicator went up to 5.73 in May (January when advanced).

The boom is loosing some headway. However, it is not unusual for a rise such as we have seen recently in the F.R.B. Index to slow up from time to time. It is too soon to be concerned, but there is the hint of a cloud on the horizon. The Geisinger Indicator should be watched very carefully during the next few months.

September 27, 1961 E. R. Dewey

The recent figures:

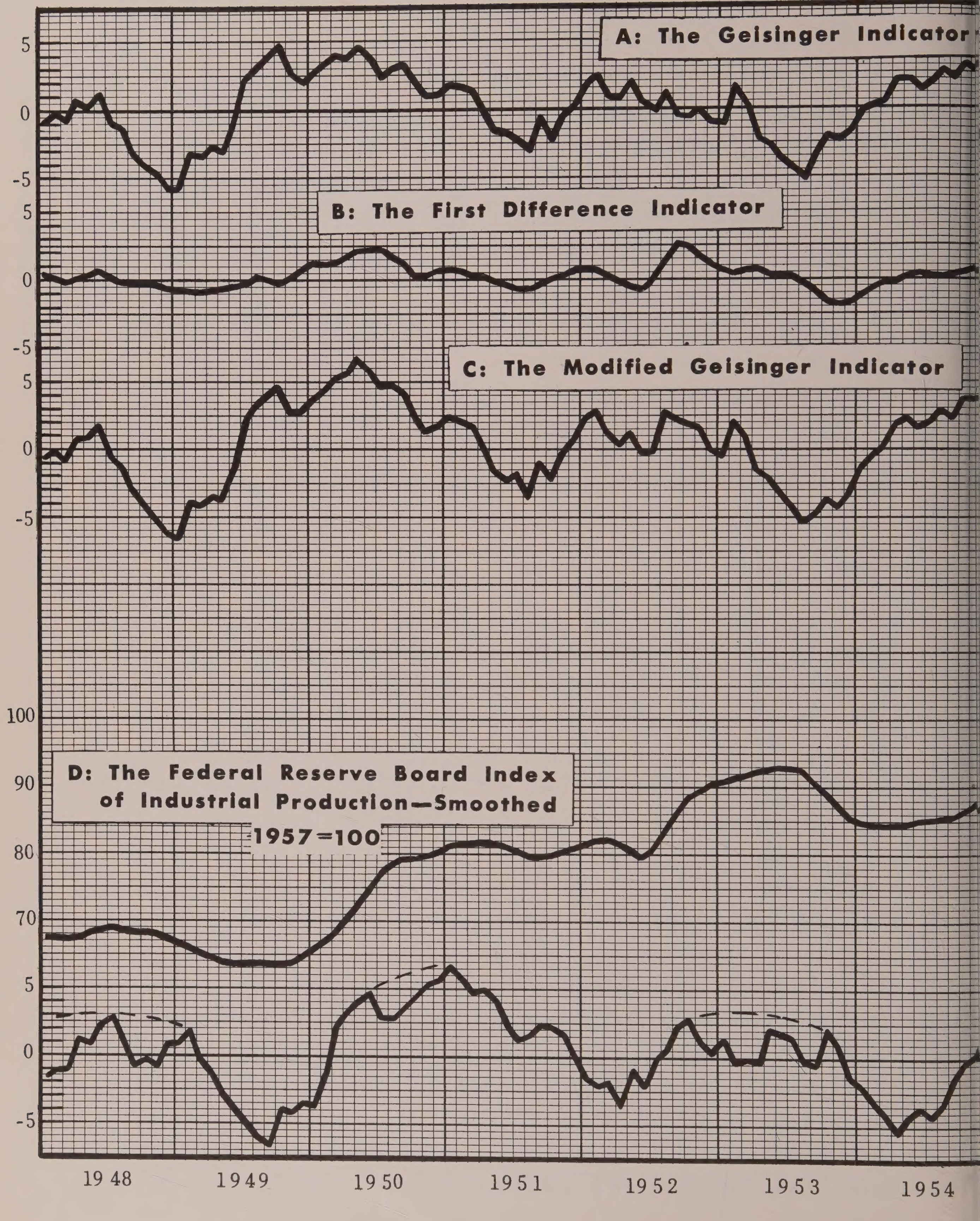
Month	F.R.B. Index §	Geisinger Indicator	First Difference Indicator	Modified Geisinger Indicator	Timing Advanced 8 Months
Jan-1961	102.3	-2.20	-1.08	-3.28	1961-Sep
Feb	102.1	0.40	-0.49	-0.09	Oct
Mar	102.6	2.60	0.48r	3.08r	Nov
Apr	105.6	3.60	1.59r	5.19	Dec
May	108.3	3.40	2.33	5.73	1962-Jan
Jun	110.4	*	2.39r	*	Feb
Jul	112.1r	*	1.83p	*	Mar
Aug	112.8p	*	*	*	Apr

§ - 1957 = 100, adjusted for seasonal variation
p - preliminary;
r - revised
* - not yet available

For $5 a year extra members can get the Geisinger Indicator text and chart by first-class mail immediately after it is written. This service saves you the two weeks that it takes to print and mail Cycles, plus the two weeks it takes the Post Office to deliver it.

The chart: See the next two pages

The Geisinger Indicator Compared To Industr



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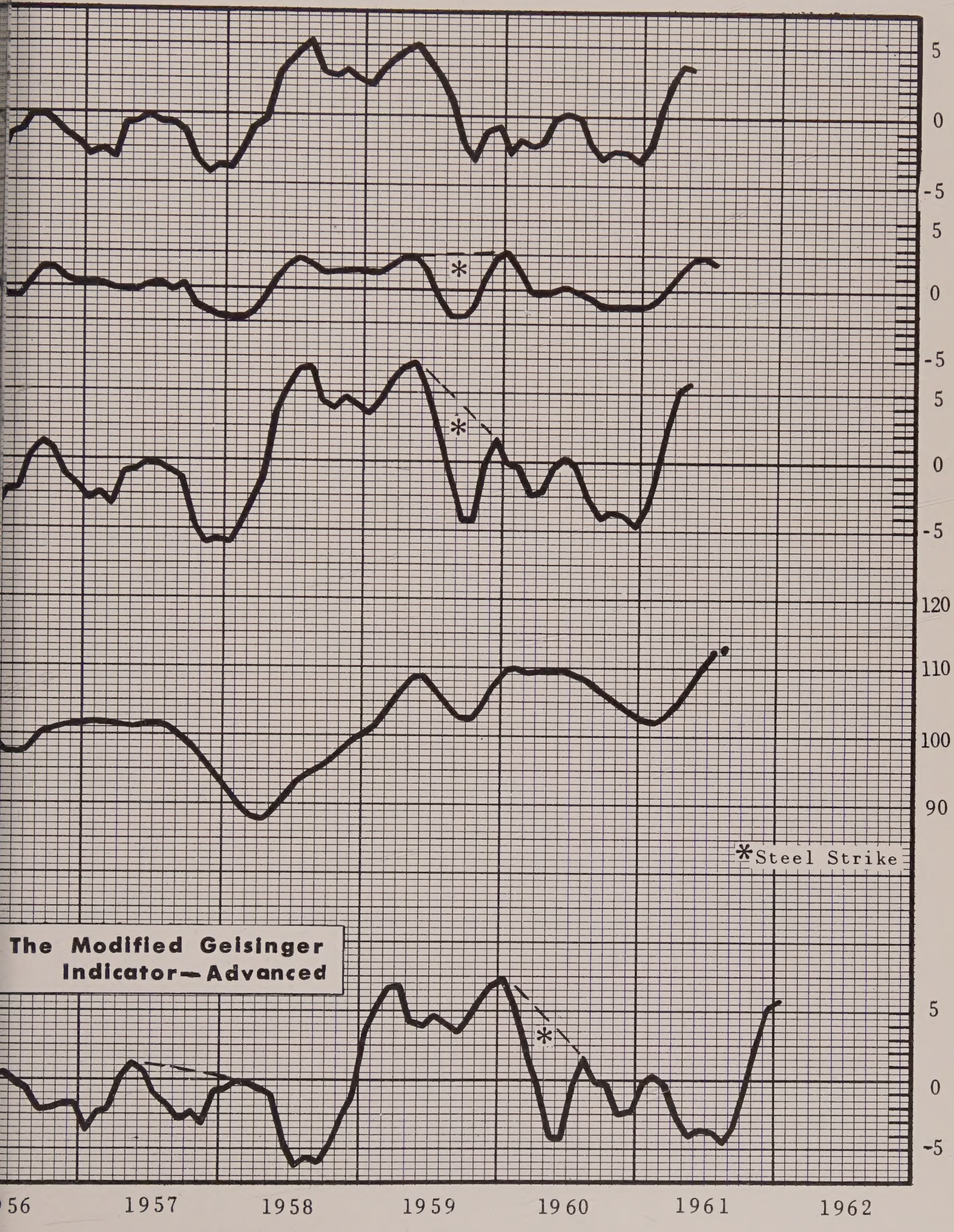
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*Steel Strike
The Modified Geisinger Indicator—Advanced
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56
1957
1958
1959
1960
1961
1962

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